

Call for fresh look at Oxford awards

by Paul Flather

Colleges at Oxford University are being urged to consider reforms that would separate the awarding of open scholarships and exhibitions from the admissions system.

The university's management committee on admissions this week considered a report from a six-man sub-committee calling for a fresh review of the university's awards system.

The sub-committee suggests that awards should be given to students for their achievement at university and have been given a chance to show their "quality" in course work, papers at the end of the first year.

The report will go before a meeting of representatives of all colleges on October 23, but the colleges are likely to ask for more time to consider the implications before taking any decision.

Scholarships at present have two functions. They act as a sign of prestige, denoting excellence, and as a device to redistribute college funds. But a first-choice college does not offer a scholarship to a candidate, but another college of preference does, the candidate is obliged to go to that college.

Dr Oliver Taplin, chairman of the management committee on admissions, and chairman of the sub-committee which produced the report, said the admissions system was under constant scrutiny.

"We want to attract the best people to the university and the suggestions from our committee are aimed at that. Primarily we want to simplify the system, but of course nothing can be done unless the colleges agree", he said.

Validation fees 'uneconomic' despite 23 per cent rise

by John O'Leary

Universities' fees for validating college degrees have risen by 23 per cent this month. But, although the charges are more than three times as high as those levied by the Council for National Academic Awards, a survey has revealed that most universities still consider the process uneconomic.

The survey was conducted by the Committee of Vice-Chancellors and Principals in 1978, but university participants confirmed its findings at a recent conference in Leeds. They want new research to be conducted to show it would be possible to charge less. But the CVCP survey found this to be false and suggested that a substantial increase would be necessary to keep pace with costs.

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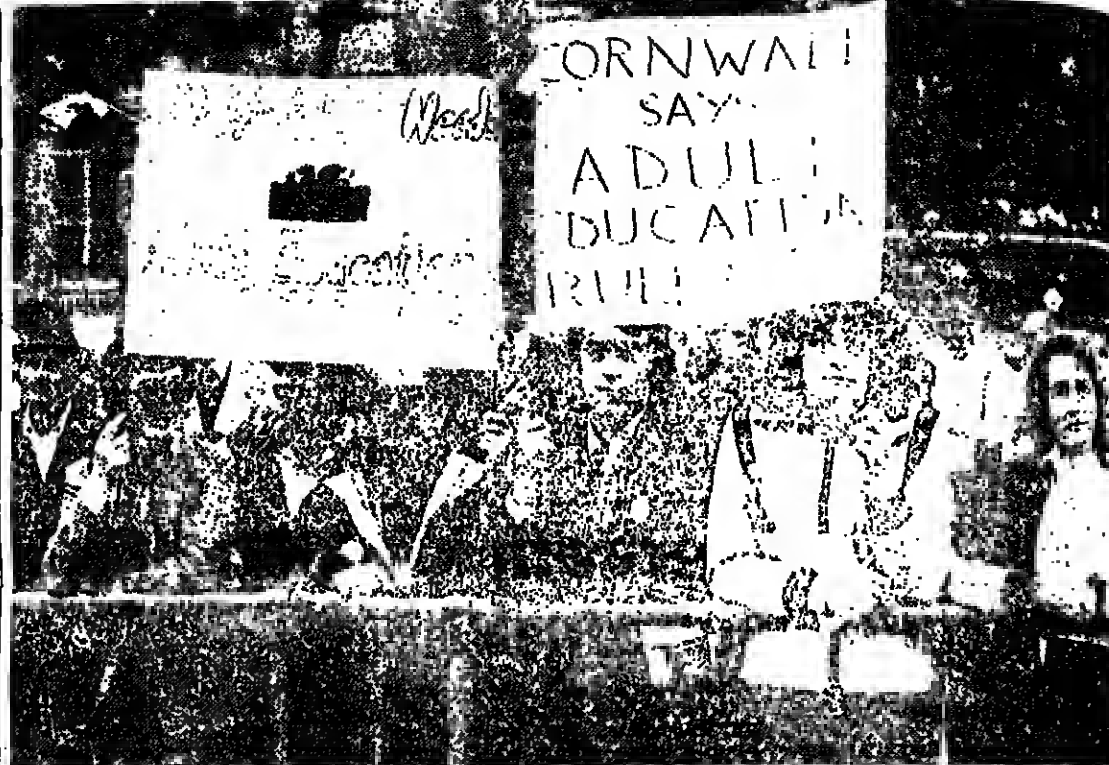
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There was a large turnout in Trefalgar Square recently for an all-party rally protest against cuts in adult education. Speakers included Lord Beecham, Liberal spokesman on education, the Lords, and Mr Gerry Fowler, former Labour minister for higher education. A message to rally from Mr Harry Greenway, Conservative MP for Ealing North, called on supporters to demand "one of the most crucial services that education can provide in any civilized society".

Training eased for scientists

The General Teaching Council of Scotland has agreed to proposals from its education committee to ease research training requirements for physics and chemistry teachers in order to improve their supply.

The main recommendation is to allow graduates with a one year post in physics and chemistry to take the one-year postgraduate teacher training course leading to a qualification in physical science.

The GTC also accepted the proposal that graduates with only one year in physics or chemistry attend after-school classes to enable them to comply with the GTC regulations requiring two passes.

This council agreed to accept mature, suitably qualified graduates and pay them to take the one year post graduate teacher training course, but it rejected proposals to recruit mature graduates direct from industry or to allow them to teach.

While welcoming the Scottish secretary's intention to make primary teaching an all-graduate profession, the GTC criticized government proposals to make it a three-year course.

The GTC backs a four-year course, which it suggests could be implemented without using any extra resources, and says a three-year degree would be regarded as inferior and would therefore satisfy the concept of an all-graduate profession.

Lecturers want close look at Thames Poly plans

by David Jobbins

Academic staff at Thames Polytechnic are demanding careful examination of plans to hive off departments from its main Woolwich site in an effort to make more economic use of its outpost at Dartford, Kent.

A working party has produced a set of four proposals which were considered by the polytechnic's academic council last week. Departments being considered for a move were humanities, social studies, architecture and surveying. It is only two years since the latter departments were involved in a move from Hammersmith.

The polytechnic's branch of the National Association of Teachers in Further and Higher Education fears that greater weight is being put on cash and space savings than on academic criteria and that the expansion of part-time courses—particularly in humanities and social studies—may be jeopardized by any precipitous moves.

They also want full discussions about the implications for their members' conditions and allowances before agreeing to a move.

Thames's problem is that its site at Dartford is grossly underused, with only some 200 students occupying premises originally designed for 700. Meanwhile, its main site is acknowledged to be overcrowded.

The working party has received no fewer than 45 written submissions—the one from the humanities department alone amounting to 18,000 words—dealing with implications of carrying through development plans agreed in 1978. The staff of affected departments argue that the cheapest solution—moving classroom-based courses—laboratory-based courses—necessarily the best education for humanities or social studies—would be lost if courses were moved, they say. Facilities could reach £170,000 a year, but the staff say that there could be a serious loss of part-time students, which have come such a feature of the polytechnic in its southeast London setting.

But if plans were to go ahead next week, when the academic council reconvenes, the staff say that the position of refusing to cooperate with transfer proposals.

Polytechnic director Dr John Slinger, said this was carried out in the name of the academic council might lead to a loss of staff and a loss of short-term gains.

"Everybody's working hard, but the working party is talking of the difficulties of undertaking this process. There is an overall advantage in polytechnic in the long run, although there are obvious disadvantages in the short term," Dr Slinger said.

"I have not come across a situation without difficulties."

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North American News

United front negotiates high loans

From Clive Cookson

WASHINGTON

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But the two organizations have very different bursary schemes in mind. The NUS wants the bursaries to be straightforward grants, allowing the repayment interest rate on Federally guaranteed loans to rise from seven per cent to nine per cent, the Senate passed this revised legislation by 83 votes to 6. The Senate had narrowly defeated the previous version of the bill because members of the budget committee said it would be too expensive.

Higher education lobbyists said they could live with a slightly less generous loan programme because overall the legislation, which authorizes the repayment interest rate on Federally guaranteed loans to rise from 1981 and 1985, was to good. They got the bill they wanted because the associations representing all sections of private and public higher education, from research universities to community colleges, remained united in their support throughout the two-year legislative process.

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Clash over bursary scheme

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University enrolment increases

Student numbers in Canada are going to increase again in 1980-81, according to preliminary enrolment statistics. The upturn began somewhat unexpectedly last year, following declines in 1977-78 and 1978-79. Its continuation this year is a great relief to university administrators who were depressed by the more pessimistic projections of two or three years ago, which predicted a steady fall in enrolment from the 1976-77 peak.

It is too early to say how big this year's enrolment increase will be. Max von Zur-Muehlen of Statistics Canada writes in the October issue of *University Affairs* that university applications for this year were 10 per cent up on 1979-80.

But this increase was concentrated in professional and career-oriented subjects such as engineering, administrative studies, and management (which was 25 per cent up on last year). Since many universities have severe enrolment restrictions in professional programmes, the substantial growth in applications will not be reflected in such a large rise in full-time student numbers. Mr von Zur-Muehlen points out that many universities were opting instead for vocational programmes at community colleges rather than choosing on-site subject at university.

As usual, the enrolment trend is varying a lot between provinces and between universities. Some institutions are reporting increases large enough to cause overcrowding on campus. For example Simon Fraser University in British Columbia, where the preliminary head count is up 12 per cent on a year ago, is having to use dining halls as temporary lecture halls.

The task force, which is composed of civil servants from the Federal and Provincial governments, is due to produce its recommendations by November 15. But they will not be made public until early next year, after they have been reviewed by the provincial education ministers and the Federal secretary of state, who is responsible for the CSLP.

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Overseas News

Changes forecast for Poland

Major changes in Poland's higher educational system may be on the way, according to recent statements from the Minister of Science, Education and Technology, Mr Janusz Korwin. In recent interviews with the Warsaw daily *Zycie Warszawy* and the prestigious weekly *Polityka*, he announced that a new law was being drafted, designed to meet the demands put forward by the academic milieu. The first draft of the proposed legislation will be ready in December; in the meantime, however, he said, new practices would be introduced in the Ministry's dealings with universities and higher colleges. In particular, the Minister would not appoint rectors without prior consultation with the university senates, who would make their own choice by secret ballot.

The appointment of rectors and other senior academic staff is one of the main issues on the agenda of the new independent Trade Union of Scientific, Technical and Educational Workers (ZZPNTOW). Indeed, its chairman, Zdzislaw Bibrowski said recently that if the universities could regain true autonomy, many of the day-to-day problems now facing academics would automatically resolve themselves.

Gorski's statements do not, at the moment, go as far as complete academic autonomy; they do, however, ensure that Party backed appointments cannot be made contrary to the wishes of the senate.

Also in question is the future of the Central Commission of Qualifications, responsible for the awarding of higher degrees. The work of this body has, in recent years, aroused considerable doubts in the academic community. Gorski's "personal opinion", he told *Polityka*, is that there should be "much greater explicitness" in the working of the Commission, with the right of appeal in the case of a negative decision.

Young graduates in the technical sciences, also, are likely to benefit from a shake-up in Polservis, the organization responsible for sending technical missions abroad. In an unusually frank interview on *Wprost*, the director of Polservis, Wojciech Kowalski, said that the Sejm (foreign trade commission) which had recently criticized service exports, "I did not understand, the work of his organization. Selections for technical missions abroad were made by ministerial commissions, whose choice often fell on bureaucrats rather than the required experts or technical experts. Moreover, the relevant ministries will have to give their consent, said Kowalski, not often needed out of the most promising candidates for their own needs.

Guerilla group issues death threat to student leaders

from Howard Berrell

JOHANNESBURG
An extreme right-wing white guerrilla group, the Wit Kommando (Afrikaners for white commando), has issued death threats to two leading members of Poltu, the newly formed white (enlightened) political organization for South African students. Recipients were Poltu chairman Peter Fourie and founding member Hugo Pienaar, a Potchefstroom University law student.

The Wit Kommando also threatened Mpho Mashinini, brother of the exiled leader of the 1976 Soweto student revolt, Teatele Mashinini. Mpho Mashinini is one of a small group of black students who have publicly met with the Afrikaner-dominated Poltu organization.

Mpho Mashinini, a former accused under South Africa's wide-ranging terrorism act, addressed Poltu's founding Congress in September. Police are reported to be investigating the Wit Kommando's responsibility for a recent bomb attack on the offices of a Verligte Afrikaner academic, Professor Jan Lombard, a Pretoria University political scientist.

Professor Lombard had authored a recently-published constitutional plan for South Africa's Natal province to terms of which black groups, particularly Chief Gesta Buthe's Inkatha National Conference, would have a say in the running of the region.

Both Fourie and Pienaar have reacted to the threats by saying they "will not be bullied" by the extreme right-wing underground grouping.

"I want to assure my nameless friends that I won't break my strong bonds with my black Christian brothers," says the leader of a student political organization that is active in realizing a peaceful South Africa for all its people, said theology student Fourie, who also heads the Students' Union for Christened Action (SUICA).

The Wit Kommando threats are seen by some observers as indicating a deepening of the schism within Afrikanerdom, the effective political power in South Africa.

In the view of these observers, Afrikanerdom's factions are divided largely along economic class lines. On the one hand, Afrikaner students, from their mainly middle-class backgrounds, are in small but significant numbers, pushing for the involvement of South Africa's black population in the effective decision-making process. On the other hand, a substantial section of Afrikanerdom is threatened by black advancement in that it would endanger their position of relative privilege on the factory floor, in comparison, to the position of blacks.

White Book hits out at training

from Guy Neave

PARIS
Greater attention should be paid to improving research teams if France is to avoid becoming a colony for scientific research, intimated a senior French official in a report to the President of the Republic, Valéry Giscard d'Estaing, dealing with the contribution of scientific research to France's development.

The report, which was published yesterday, *The White Book*, drawn up in response to a request from the President of the Republic, Valéry Giscard d'Estaing, deals with the contribution of scientific research to France's development.

Research workers, whether they are engaged in applied or fundamental research, must be both imaginative and original. The competitive examinations, concours, in higher education do little to foster these qualities, it says.

Also criticized is the Government's policy of trying to match research with the needs of the current needs of applied work.

China starts education drive

PARIS

Beijing's district colleges, which have been closed for more than 12 years, have reopened as part of the drive to raise the educational level of workers and managerial personnel.

Now six districts in the city are running colleges, mainly geared to teaching middle school graduates working in the city's several hundred small factories, shops, government offices and neighbourhood committees.

The colleges give two to four years' courses in the Chinese language, foreign languages, law, industrial, economics, business, management, architecture and medicine. Students attend classes and half-day practical work, with a week-end study session. They are awarded diplomas after passing final examinations.

The Hong Kong Evening College trained over 1,300 students in the eight years before 1966. Many of the graduates have become the backbone of the technical force in the district's factories and enterprises.

Medical graduates attacked as 'superficial and ignorant'

from Uli Schmetzer

ROME

European graduates in medicine are produced on an assembly line. Their motivation is mainly commercial, their training superficial, the methods of teaching old-fashioned and graduate ignorance of the most serious social ills is shocking.

This dovetailing judgment of European doctors emerged from a week-long conference in Rome last month organized by the Swiss Kilo Medical Foundation. The main aim of the conference was to study reform of medicine at university level.

The conference published a 100-page document entitled *The Formation of a Doctor in a Changing Society*. Its conclusion warned that medicine was in a grave crisis, not only in Italy but in every country of the European Community.

"This is mainly due to the antiquated university structures of the old Europe where faculties and academic senates have failed to absorb the technological and scientific progress of the last decade", the document said.

It added: "This has led to a social and cultural crisis in the medical faculties and in particular in the medical faculties."

The Rume conference was organized by Professor Aldo Angrisano, the Italian representative on the EEC Commission for the Formation of Physicians.

The outspoken document criticized today's medical graduates as superficial, lacking in motivation, and their mark either in public or private practice, hardly merited, scarcely competent though often highly cultured and in some ways able to confront the all of modern urban society.

Among those modern ills the conference singled out the problems of old people, the phenomenon of drug-dependence, the character of professional life, the competition for labour, the stress of an urban environment and chronically degenerating behaviour patterns.

This document said both Italy and Europe were in an urgent need to create a new type of doctor, one competent to deal with a society profoundly changed in respect to half a century ago.

period on which most medical training is still based today.

Unqualified adults stand good chance

from Geoff Maslen

MELBOURNE

Australian adults with no university entrance qualifications have a good chance of succeeding at university studies as the students who enrol straight from secondary school, a study by Deakin University, in Victoria, has shown.

There appears to be no major difference between "special entry" students and other categories of students in retention rates, pass rates, or the proportion of students who complete their studies within the first year of their course.

The Deakin investigation was made against a background of growing demand for tertiary studies by older or "mature age" Australians. Already in some universities a quarter of the student population are aged 25 or over. In colleges of advanced education where half of all students are studying part-time and externally, only a fourth of the students are older than 25.

The increasing number of older people seeking entrance to universities and colleges coincides with the number of students who enrol straight from secondary school, a study by Deakin University, in Victoria, has shown.

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The special entry on campus students (but 74 per cent for those mature age students) to 78 per cent for the under 21 normal entry students.

Mature age off-campus students scored second highest for grades distinction or high distinction, the comprised 20 per cent of the number receiving a final result in each course. On campus normal entry students scored 15 per cent in each grade. Overall the results show a difference of consistent difference between any of the sub groups investigated for the also courses—those from those offered by the school of humanities and social sciences.

Commenting on the results, the vice-chancellor of Deakin University Professor Fred Jones said: "Some people talk of the importance of maintaining standards. I interpret that to mean insisting on high entry standards. I believe, however, that the standards of the student are those of the entry, not those of entry."

Benny Morris in Jerusalem meets the new head of a philosophy department

Father Dubois' ironic elevation

Father Marcel Dubois, a Christian monk, has just been appointed for a three-year term as head of the Hebrew University's philosophy department. He is quick to note the irony of his elevation.

It was the Dominican Order, to which Dubois has belonged since the age of 18, which was charged by the popes of the late Middle Ages with cleansing Christendom of heretics and infidels. And it was the Dominican Order, de Torquemada, the First Grand Inquisitor, who in the late fifteenth century persecuted and hunted the Jews out of Spain, an act compared in Jewish history to the Romans' destruction of the Second Temple in Jerusalem in 70 A.D. and to the murder of six million Jews in Europe by Hitler during the Second World War.

I interviewed the 60-year-old Dubois, the only non-Jew ever to head an Israeli university department, in his study in Ma'aleh, West Jerusalem's small Dominican monastery situated some 500 yards from the Old City walls.

Oliver trees line the walk leading to the stone building's entrance; a whitewashed corridor, vaulted with portraits of saints, leads to Dubois's second-floor study, where shelves, desk-top and floor are piled high with books in French, English, Hebrew and Latin. A crucifix adorns one wall; a white crucifix hangs from a peg on another.

Dubois is a deeply committed Christian Zionist—a youngling bred in a world which once produced General Charles "Chinthe" Gordon and Arthur James Balfour's son.



Marcel Dubois: precision and erudition.

for the Christian church's "Joseph" for historic reconciliation with the Jewish people. Each year he celebrates the anniversary of the Christianization of Jerusalem. And every summer he lectures to visiting Christian groups about Judaism, Zionism and Israel.

An Israeli citizen since 1974, Dubois speaks passionately about resurgent Israel and of his "love" for the Jewish people. "I love my friends to regard with amazement the spectacle of the persecuted of oil barons, comforted by the multitude, all busy hunting the anti-Israeli epithets. They are all instruments of the devil. The part of a general onslaught of the forces of darkness against the Light."

Sent to Israel by "a providential coincidence of my desires and the superior" to study the Jewish people and culture of the Jewish people, Dubois, a "quite unexpected" in 1968 was invited by the Hebrew University's philosophy department to give courses on Aristotle and Aquinas. He stayed on and received a doctorate.

It was during primary school "secret history" (Old and New Testament) classes that Dubois was first drawn to the Jews, whose history he today describes as "singular and expressive of the beautiful, handwork of God."

Dubois regards his academic work as secondary. In Israel since 1982, he sees himself in the "Vanguard of the Jewish people."

Anthony Quinton chronicles the public and private reversals in the life of Francis Bacon

So much glory, so much shame—a just epitaph?

Francis Bacon was born on January 22, 1561, at York House, off the Strand in London. He was the second son of Sir Nicholas Bacon, Lord Keeper, and of his second wife, Ann Cecil, later Lady Burghley. He was born in 1561 in a comparatively modest social position: his father, according to the *Dictionary of National Biography*, being "sheepreeve to the abbey of Bury St Edmunds". But he got to Cambridge, became friends there with William Cecil, later Lord Burghley and Elizabeth's chief minister, and with Matthew Parker, later archbishop of Canterbury. In the 1580s he acquired a good deal of former monastic land and with the accession of Elizabeth he was appointed to the good offices of Cecil, Nicholas Bacon soon showed his capacity for a high post. Unlike his famous son, his was "exceeding grass-bodied".

Bacon's mother was a well-educated and doctrinally rigid Calvinist. It is possible to interpret his son's glowing expression of his mother's "the gift of the gift that separates knowledge of nature, based on sense and reason, from supernatural knowledge, based on revelation, as a direct consequence of her severely Protestant teaching, on the assumption that the pious profession are sincere, or as an ironic rejection of that teaching, if they are not. Anne Bacon was the sister of the wife of William Cecil, her husband's Cambridge friend, the Lord Burghley who was to be his largely unresponsive object of contempt for his preference for her son, Francis.

Bacon accompanied his elder brother, Anthony, to Trinity College, Cambridge, in April 1573 at the remarkably young age of twelve years and three months. They lived there for only two years. If he had been educated by the philosopher, he would have been a philosopher. In particular, he has been suggested that he may have extended lectures or which the new logic of Bacon was expounded. Reverend Deane, who was to defend the old logic against the Romanism of his former pupil, William Temple, in the 1680s, became a follower of St. John's and began to lecture on logic in the year Bacon arrived in Cambridge. Much later, in 1916, Bacon said to his biographer, Rawley, that he "fell into the disavowal of the philosophy of Aristotle; he found it worthless, and he would ever ascribe all high attributes, but for the unfruitfulness of the way."

It is easy to understand why Bacon's biographers should take on any of the legends that surround his life. From the time he left Cambridge, when still less than sixteen years old, he was continuously engaged in a busy public career: legal from the day of his father's death in 1579, frequent political orator, direct service of the crown, and all this and the extravagant glorification of his estate at Gorhambury in 1584, to acquire the store of knowledge which made his giant philosophical scientific project at least not ridiculous "overweening", and enabled some substantial chunks of it to be realized.

The year after he left Cambridge Bacon accompanied Sir Francis Walsingham, the English ambassador in France, to Paris, where he was found by the French king, Henry II, who was then in the midst of his last illness. Bacon was active in Parliament, particularly in working on the consequences of the union of the English and the French crowns, but there he was not prominent until 1607, finally achieved the Solicitor-Generalship, Coke being no longer an obstacle, since his promotion to the bench in the previous year.

In 1606 Bacon married Alice Barnham, daughter of a sheriff of London and an heiress. The *Esays*, *Clapham's Britannica* says, that it seems that [this] marriage, though childless, was not unhappy. Aubrey takes a more colourful view of Bacon's domestic life, saying that he was a pedantic and that his "Gentle and a favourite looks like a child, but his lordship always gave judgment secundum oremum et bonum". He goes on to suggest that Bacon's wife was not without consolation. "His dowager", he writes, "married her gentleman-usher Sir Thomas, third Lord Underhill, whom she made deaf and blind with too much of Venus."

In 1605 the first of Bacon's philosophical writings was published: *The Advancement of Learning*. The first book is a flowery, panegyric on learning; the second, more than twice as long, is largely taken up with a highly elaborate classification of the varieties of knowledge that has exercised a profound influence on the arrangement of libraries and of encyclopedias ever since. Four years later Bacon's *Novum Organum* (it was not published until after his death), in which his influential views about the social nature of scientific research were put forward in imaginative form.

The welcome death of the hated Salisbury in 1612 brought Bacon back to the public world. The other main human obstacle to his political career, Coke, was removed, not by death, but by promotion to the court of King's Bench at Bacon's suggestion. Now at last he achieved the post of Attorney-General he had pursued for such a long time. He addressed himself effectively to the king's new favourite, George Villiers, soon Earl, and eventually Duke, of Buckingham. He occupied himself with supporting the royal prerogative against the ancient rights and customs defended so doggedly by Coke, and developed his far-reaching ideas about the rationalization of law.

Some time in 1591 Bacon made the friendship of the Earl of Essex, Elizabeth's last favourite, still in some disgrace for his marriage, not approved by the queen, to the widow of Sir Philip Sidney. Only twenty-three, Essex was six years younger than Bacon. His highest moment as a national hero after the expedition to Cadix was still three years ahead. In 1592 Bacon wrote in a letter to Burghley the famous sentence, "I have taken all knowledge for my province." Perhaps the main outlines of "The Great Instauration", the fabulous, grandiose programme of Bacon's intellectual career, were already worked out by this time. He was more visibly active in the world of public affairs. Essex's favour, often self-destructively impetuous, failed to secure for Bacon the post of Attorney-General. It went to the man who was to be throughout his life his most persistent enemy, Edward Coke, defender of the common law against absolutist tendencies in Elizabeth and James I. Even the lesser post of Solicitor-General was not forthcoming, since Bacon had announced the queen's resentment by adamantly opposing to her taster policies.

During this competitive fall in his activities Bacon may have been engaged on writing the first of his *Esays*. The first collection of them, 10 in number, came out in 1597. (They reached their final total of 58 in the edition of 1625, a year before Bacon's death.) His financial affairs were in a bad state. In 1598 he was briefly arrested for debt. The disastrous failure of Bacon's Irish expedition gave Bacon an opportunity to retrieve his position in the eyes of the queen, and to give evidence of somewhat repulsive qualities of character: mismanagement and disobedience to the queen's commands. Enraged and affronted by his fall from the queen's favour, Essex planned an insurrection. The support on which he had counted failed to appear and he was soon a prisoner.

Both Bacon and Coke took part in the ensuing prosecution, but to draw the boundaries between them in a muddled and incomplete fashion and Bacon had to rescue the proceedings from his clumsiness. Essex was condemned, and executed. Bacon has been much blamed for his betrayal of Essex, but, whatever responsibility he may bear for encouraging Essex to pursue his Irish misadventure, he does not seem to have had any knowledge of Essex's plot to seize the position of chief minister by a violent coup d'état.

These at least somewhat morally ambiguous services to the crown do not appear to have done anything to overcome Elizabeth's dislike for or distrust of Bacon. With her death in 1603 and the accession of James I Bacon's hopes of preferment once more came to life. He was indeed knighted four months after the death of Elizabeth, and he was made a member of the Privy Council. The fact that it was also conferred on three hundred other people, he was active in Parliament, particularly in working on the consequences of the union of the English and the French crowns, but there he was not prominent until 1607, finally achieved the Solicitor-Generalship, Coke being no longer an obstacle, since his promotion to the bench in the previous year.

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Francis Bacon: "a fairly cold fish". National Portrait Gallery

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disqualification from Parliament and exclusion from the court and its neighbourhood. In fact the fine was, in effect, remitted; he remained only two or three days in the Tower. But he was unable to get released from his exclusion from within twelve miles of court until he had sold his birthplace and grand London dwelling, York House, to the greedy Buckingham, acting here with all the polished elegance of a looter scavenging at the scene of an air crash.

This reversal was the end of Bacon's public life. But he remained active and enterprising until his death five years later. *Novum Organum*, the second of his major philosophical works, had been published in 1620, a year before the catastrophe. Less than six months after sentence had been passed on him he had finished his monograph on *Knowledge*. Two compilations of natural history, raw material arranged for investigation by the method he had worked out in *Novum Organum*, soon followed. *Historia Ventorum* in 1622, *Historia Vitae et Mortis* the year after. Also in 1623 he published *De Augmentis*, a considerably enlarged version of the *Advancement of Learning* of 18 years earlier.

He did not give up his life-long habit of pestering the great for preferment. He sent a copy of *Novum Organum* to the king, who likened it, in a well-used formula, to the peace of God, since it posed all understanding. The story of his death, recounted by Aubrey, is well known. It should be quoted in Aubrey's words:

"He was taking the air in a coach with Dr. Witherby (a Scotchman, Physician in the King) towards Highgate, onow lay on the ground, and it came into my lord's thoughts, why flesh might not be preserved in snow, as in coal. They were very merry would try the experiment presently. They alighted out of the coach, and went into a poor woman's house at the bottom of Highgate hill, and bought a hen, and made the women extend it, and they stuffed the body with snow, and my lord did help do it himself. The snow so chilled him, that he immediately fell so extremely ill, that he could not then return to his lodgings (I suppose then at Gray's Inn), but went to the sick of Arundell's house at Highgate, where they put him into a good bed warmed with a pillow, but it was a damp bed that had not been lay-in in about a year before, which gave him such a cold that in two or three days, as I remember he [Hobbes, Aubrey's informant] told me, he died of suffocation."

Bacon's character has not been much admired. Pope's couplet is memorably concise: If parts allure thee, think how cold, Bacon shined, The wisest, brightest, meanest of mankind.

It was a period when the more agreeable aspects of human nature were not much encouraged in English public life. Elizabeth and James I had some excuse in the dreadful fates of their respective mothers. The Cecil were devout and sincere: James I's carmines, Somerset, and Buckingham, much worse. It is Bacon's special misfortune to have been the subject of a marvellously readable, but rollingly injudicious essay by Macaulay, in which the worst construction is put on his not unrepresentative leaning on the great, his betrayal of the Essex and the malpractice brought down on him the disaster of 1621.

He seems to have been a fairly cold fish. He said of himself, "I have rather studied books than men" and ordinary private affection appears to have played little part in his life. If so it may help to explain how he managed to achieve as much as he did of his grand design while caught up, in Macaulay's phrase, with "so much glory, so much shame".

The author is president of Trinity College, Oxford. This article is an extract from his new book, *Francis Bacon*, which is to be published next Thursday as part of Oxford University Press's *Portraits* series.

10.10.80

emergence of philanthropic traditions

[illegible]

for the British Centre, to analyze technical change is now at an advanced stage: its funds are effectively guaranteed for a decade, so it should escape the worries over follow-through which are causing such heart searching for four-

be considerably higher this year. According to figures from the Charity Commissioners the Wolfson Foundation Investments, which were valued at £42.8m in April, 1973, were later at £72.6m. "Wolfson is one of the most sparing of the trusts in its administration," says the annual report, in 1980, "and with good reason. It is one of the administrators of the National Endowments, and should be of concern to the public. It may therefore be worth mentioning the last two of the five years, during the period that he joined the staff, that actually its work, 13 shillings 10 pence - went in 20 to administration."

A consideration of the foundation's financial position brings the question of how best to predict what their real income will be, allowing for inflation, for more than a year ahead. It is difficult for them to undertake long-term commitments, and hence

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The charge that foundations follow a conservative funding pattern should come as no surprise to their critics," writes George Bonham, executive director of the Council of Learning, and editor of *Change* magazine, "with exceptions, are philanthropic extensions of the banks, the security market, and America's business leadership and they act accordingly."

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BOOKS

Could Oxbridge finance nursery schools?

Under Five in Britain
by Jerome Bruner
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Childwatching at Playgroup and Nursery School
by Kathy Sylva, Carolyn Roy, and Marjorie Painter
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Children and Minders
by Bridget Bryant, Miriam Harris and Dee Newton
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ISBN 0 86216 004 9 and 005 7

Children and Day Nurseries
by Carolline Garland and Stephanie White
Grant McIntyre, £7.95 and £2.95
ISBN 0 86216 006 5 and 007 3

During the past 20 years a number of studies have identified both the value and the shortage of facilities for the under fives. Even Mrs Thatcher's White Paper of 1974, *Education: a framework for expansion*, advocated considerable growth in nursery education.

Now, funded by the SSRC, and headed by Professor Jerome Bruner, the Oxford Pre-school Research Group has published the results of a three-year inquiry into the day care (outside their own homes) of Oxfordshire children. The first four volumes provide a most detailed examination of the major types of care, namely playgroups, nursery schools, child minders and day nurseries.

Sylva, Roy and Painter describe their observations of a few playgroups and nursery schools. They attribute play groups' rapid growth — and their major strength — to the participation of mothers, and they

conclude that the emphasis on play and expression contributes to experiences which "appear to produce as good results for their children as are achieved in more established institutions". The main disadvantage of playgroups is the restricted hours — children stay for about three hours a day — which make them unsuitable for the children of working mothers. Nursery schools provide more formal instruction for longer hours although they too are closed during school holidays.

In the third volume, Bryant, Harris and Newton concentrate on child minders, women who are paid to receive children into their own homes. In the most lively and readable volume in the series, they emphasize that Oxfordshire minders are not to be confused with those inner-city minders whose standards have shocked other researchers. Most, in their study, provided adequate space and toys and did care about the children. The researchers found that the majority of the mindered children were quiet and subdued at the minders' and were not "thriving", but attributed those disturbances not to the minders, but to the stresses in the children's backgrounds.

Day nurseries supply local care to fit in with working hours. Such is their shortage that most statutory nurseries take only children who are considered "at risk" from home difficulties. Indeed, the researchers found so few in Oxfordshire that they turned to London for a sample of three local authorities and seven private or voluntary nurseries.

In the fourth volume, Garland and White generally found the children to be well cared for and showing few disturbances. They particularly approved of those nurseries which aimed to promote

satisfying relationships, good democratic systems of management, and employed a "cooperative" style of control. Drawbacks were high staff turnover and, at least in the private nurseries, a tendency to be isolated from the outside community.

The researchers have succeeded both in providing examples of good practice and in revealing the limitations in provisions for the under fives, though they probably understate the latter. I work on a council estate on the edge of prosperous Bath. The council's only day nursery is a £1 bus trip away. I know of no official minders on the estate. In some localities, day care is almost non-existent. What can be done? Bruner accepts that the government is unlikely to find additional resources to expand the number of pre-school facilities. The research team therefore recommend extending the hours of playgroups and nursery schools, improving the training of staff, lessening the insularity of centres, clarifying their goals, and improving the placement arrangements and the relationships between minders and mothers. Even these modest reforms would require cash, while the cost of increasing facilities to meet demand would be around £300m.

While applauding these proposals, I must add two points. First, the researchers seem agreed that the most needy children come from low income families. The main thrust of social policy therefore should be towards improving their finances. Mothers could then choose whether to work or not and if working would be better equipped to purchase adequate day care. Second, the aim of expansion in facilities should be retained. The present obsession with economic criteria should not lead to the

abandonment of goals which are into consideration the social, emotional and intellectual needs of children.

Any proposals, modest or grand, should be prepared to say what the extra resources should be obtained. A few years ago, I was asked to prepare a report on day care by lowering the tax on leaving age, but now such a proposal would swell the numbers of young unemployed. So why divert money from Oxbridge? In practice, not to day care staff, but to the inner city and council estates, enormous halls, high wages and rich endowments of Oxbridge colleges and staff. Bruner and his colleagues do not discuss how pre-school facilities should be financed. Perhaps they should have had around them. But that would be tantamount to the arena of political values.

Initially, Professor Bruner presented doubts about expanding research which does not practice. Much to their credit, the team discontinued their field research progress. The team showed little interest in the social findings but were prepared to adopt the methods of observation to improve their own practice. Would that other academics possessed similar concern for practitioners.

Robert Holman

Robert Holman is a community social worker with the Church of England Children's Society and was formerly professor of social education at Bath University.

Relieving family stress

The Family Fund: an initiative in social policy
by Jonathan Bradshaw
Routledge & Kegan Paul, £10.95
ISBN 0 7100 0520 2

The Family Fund is a very minor piece of social policy, both in terms of resources (£8.3m over the years 1973 to 1976) and in terms of impact. The justification for a detailed study of it must therefore lie partly in its novelty and partly in the fact that it provides a contained and manageable subject for a case study in social policy formulation and evaluation, and it is to Mr Bradshaw's credit that these are the features on which his book capitalises.

The fund was established in 1973 in the wake of the thalidomide affair and was to consist of two sums of £4m each "to relieve family stress". Among those bearing the burden of raising congenitally handicapped, non-congenitally handicapped children, the money was to be distributed by an independent agency in the voluntary sector rather than by central or local government. It is the only instance of central government making a voluntary agency as the instrument for the allocation of government funds directly to beneficiaries. This book tells the story of how this came about and how it worked.

There are, roughly, four strands to the book: a study of the fund as policy-making and implementation, a description of its operation including members of its staff and consumer views, an evaluation of its effectiveness and efficiency of the fund, and a consideration of the scope of the problem contingent upon the exercise such as that of equity and allocation with statutory services. As a study in policy-making it suffers from lack of first-hand evidence or inside information as far as the role of the DSS is concerned, though the role of the Joseph Rowntree Memorial Trust as the implementing agency is more substantially documented. There is a nice description of how the stated aim of the fund was the result of the direct adoption and endorsement of a phrase occurring in discussion

document prepared by the trust — a situation that bears close similarity with the articulation of the goals of some urban deprivation programmes.

The evaluation of the work of the Family Fund consists largely in four parts: the extent to which it relieved stress (its explicit aim), whether it contributed to the relief of the burden of raising a handicapped child, its cost effectiveness and its adequacy in filling the gaps between the attendance and mobility allowances, the exceptional needs payments of the supplementary benefits system and the patchy fulfilment of local authorities' obligations to the handicapped and disabled.

The harder problem is the evaluation of social policies in the absence of policy to support to do and then convert what is often grandiose rhetoric into something measurable. Mr Bradshaw is very skilful in taking the politicians at their word and measuring the extent to which the fund "relieved stress" (literally) as measured by a malaise inventory. It is hardly surprising, given the casual way that this goal was adopted for the fund, that little evidence is found that it achieved it. Certainly there is evidence, as subsequent chapters show, that the fund did relieve some of the burden of raising a handicapped child through the provision of washing machines, spin-dryers and grates for clothes, bedding, transport, and most beneficiaries were grateful for the help given. But what this study illustrates (in common with other recent evaluations of specific practices) is the yawning gap between what policy makers say and what the policies actually do or even hope to do. Like the urban programmes (another initiative with rather grandiose aims and limited resources), the Family Fund, as Bradshaw points out in effect, is a mechanism for handing out small amounts of material aid by way of supplement or compensation, and the only possible criteria of success are whether the benefits are distributed fairly and with reasonable cost-effectiveness.

John Edwards

John Edwards is lecturer in social policy at Bedford College, London.

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Engineering: FINNISTON AND THE FUTURE

The future of engineering education, and by extension perhaps the future of British manufacturing industry, has become the subject of lively debate within higher education following the publication of the Finniston Report earlier this year.

During the summer THEES arranged a round-table symposium to discuss the report and its implications. The day-long discussion was chaired by Sir Geoffrey Allen, chairman of the Science Research Council, and covered the following topics, the pros and cons of registration, the length and content of the undergraduate curriculum, continuing education and the

responsibility of industry, the distinctiveness of the technician engineer, and the contribution of the schools. The other participants were:

Mr John Bartlett, a civil engineer and a vice-president of the Institution of Civil Engineers.

Professor Alec Chisham, professor of mechanical engineering at Salford University.

Sir Hugh Ford, Pro-Rector of Imperial College, London.

Sir James Hamilton, Permanent Secretary at the Department of Education and Science.

Professor G. R. Higginson, professor of

Engineering Science at Durham University and chairman of the UGC technology sub-committee.

Professor John Horlock, vice-chancellor of Salford University and vice-chancellor designate of the Open University.

Mr Philip Hughes, a director of Logica, the computer software company.

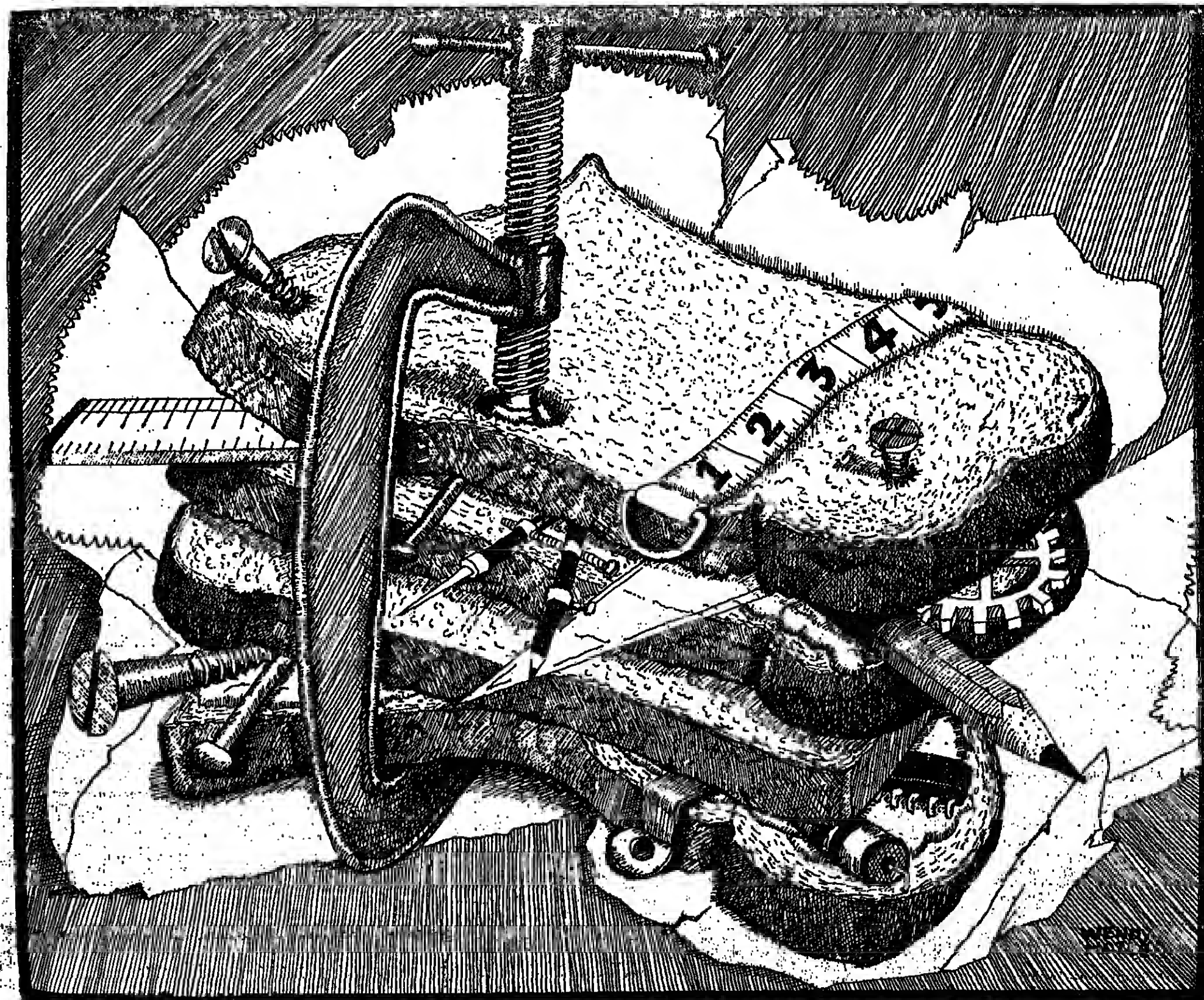
Professor R. C. Smith, professor of electronics at Southampton University and chairman of the Conference of Engineering Professors.

Mr Alan Thompson, then Deputy Secretary at the DES.

The discussion was taped and a transcript made.



SIR MONTY FINNISTON



Registration and professional competence

Sir Geoffrey Allen, Chairman, shall we begin the discussion by talking a little bit about the sort of qualification and the sort of registration that one expects to develop over the next decade — in the professional engineering field? Perhaps we should start on this issue of registration, on what people feel, and then we can go on to how this will be

reflected in terms of training of engineers by individual courses first of all. Hugh, you have been in the game a long time. You have been dealing with academic engineers and you have had a lot to do with the mechanical engineering industry. Would you like to begin by developing, as you see it, the need for the national recognition of engineers, or perhaps the need not to?

Sir Hugh Ford: I think that having arrived at this point with Finniston and the spotlight on professional engineers, some more formal recognition and registration of engineers, particularly in manufacturing industry, is required. That is that registration should be a point at which the engineer has demonstrated competency to practise, by which I mean not only a systematic and well-organized education and training as a professional engineer, but also some years of experience and work supervision prior to being acknowledged as then able to practise freely under the registration or whatever it may be that is set up in other words, I believe registration at what is recognised as a chartered engineer level, rather than on the training and education level. I say this not only from the point of view of many years of teaching engineering, but of having gone to industry in decision-making and so on.

But I believe that there are aspects of engineering activity which we cannot teach in universities, and which are not entirely covered by a training course in industry, however good and however well-structured it may be. So I think there are three ingredients required for registration. That is the first point I should like to make.

The second I should like to make is that I believe very strongly that we can develop a good competitor to anything there is in the rest of Europe by integrating three or four years of university work with two or three years of industrial training. I put it that way because I do not believe there is a rigid pattern that can be followed for all branches of manufacturing industry. Moreover, I think it is advisable that universities and other organisations should be given flexibility in developing the best interaction between industry and the university — say "co-operativity" in the sense of those who give university degrees — to get an integrated education for the engineer.

There are various ways of doing this and I think that could come out later. I think we ought to try to establish the principles so, a starting point. This is not to say that a lot of work of this kind has not been done — rather thin, and rather thick sandwiches, the four-year courses in which there is intended to be close involvement with industry, and any own total technology project in which we have developed a very close integration between certain companies which are competent to do this and ourselves in a one-three-one and now with the four-year courses a one-three-and-a-half and a half type of course. Flexibility is needed in the development of these schemes.

The problem, in this, is that industry is not geared up to cope with the total number of engineering students who require to go through such a course. This is where the main attention is needed. Industry will collaborate with you, but they have got many other interests and many other objectives and anxieties which mean that unless you are constantly at it you do not get total integration.

continued on page 11

FINNISTON AND THE FUTURE

Continued from page 1
Having said that, I do not believe that for the run of the level students a longer course than that is required. You then should be able to continue education.

Chairman: You firmly believe that continuing education is a key for a good basis?
Ford: I will say more about that when we come on to it, but that would be part of my requirement, and I think that the professional institutions and everybody else has to come in to ensure that continuing education. To summarize: a three-part course of education and training, closely integrated, plus practical experience, to demonstrate competence. The second point is the importance of the total involvement of industry in the rounding out of a five-year package.

Chairman: I think that is a very good start, because it gives us a clear picture of the way Sir Hugh's mind is working. Can I pick up one thing not related to the pattern that is described, and it is this point about the opportunity that we have in Britain at this moment in time. People admire the French and German courses in engineering. If they have a fault, Hugh, I believe that they are in the toe rigid in the early days, and keep people too long in the universities.

Ford: Certainly this is true of the Technische Hochschule. This is coming out and it is interesting that one is now having discussions with people in Switzerland, Germany and Holland on shortening their courses and going in the direction of getting competence to practice by involvement with industry in some way. So far as the grandes écoles are concerned, of course, some of these courses are far too short. You can become an engineer after two years at the Ecole Polytechnique providing you have had a flying start. There is no one pattern, but I think there is a recognition that these courses are too long; students get clobbered at too early a stage, and probably with some of the stuff outdated. This is my experience anyway from discussions I have had.

Chairman: I have just had a rumour with this new head of the German DFG, the equivalent of SRC, who made the very simple analysis of Shell and what happened to British engineers going into Shell and German engineers and found that they by and large the British did better going through the system, simply because they went in one or two years earlier. So I think this is a point which should not be lost. It does, of course, throw a great onus on industry, if they agree to take part in what is not a real partnership in training, to do the supervision well and to use the people with restraint in the early years so that they get a good basic experience, and are not just shot through the system as whizz kids. There is certainly a lot of experience that I have had in industry that there is always the great temptation to move them on perhaps a bit too fast.

Ford: That, certainly, Geoff, but also one which I am sure we shall discuss on to discuss our technical engineer and the technician. A lot of students are finding themselves frustrated because they are having to do technician's engineering work in their early years and they are not getting the experience that they need in order to register in the sense that there is now a new talking point.

Professor J. H. Horlock: Geoff, would it be helpful if I gave a sketch of the way the committee came round to its recommendations? To begin with we accepted that licensing was not on. I think Hugh has accepted that. We were talking about registration, we were not taking about licensing. Firstly, we got a very strong reaction from industry that the engineers that we were producing were not practical enough. The second reaction was the evidence that came from the committee's conference, which said essentially that our engineering education was very good, but that it was not enough. The third reaction was the evidence that came from Europe—the Dutch and German courses—and the impression was that the British system was not competent to practice, but ready to begin to practice when they came out of their six or

seven-year courses, which include a lot of engineering practice.

So that was the evidence that was coming to us. Another important thing was the evidence from the RIB which said that of our full-time graduates (those having done full-time courses) only 30 per cent received training to meet RIB standards. We concluded that there was not much wrong with the engineering science teaching. What had really gone wrong was the introduction of engineering practice. Many of us thought back to our three-year degrees plus graduate apprenticeships and most people thought that was a pretty good system. So our concern was to move back in that direction. The evidence that we received suggested that the present qualifications offered by the institutions did not place an emphasis on training; training had disappeared in spite of the fact that the institutions were still requiring it in their qualifications.

So we were looking for something that would place an emphasis on integration of education and training, and we thought in terms of a three-year degree and then an integrated education and training. We did not wish to go any further because we thought we would have our work cut out in maintaining the standards of state registration to that level, and we did not see that it was possible to have a state registration fully controllable, subsequently up to, if you like, chartered engineer status or the equivalent. We have never said that RENG and Reig(Dip) were the equivalent of chartered engineer. We said that registration of an engineer who was fit to begin practice. We fully expected, I think, that the institutions would, in their own way, add their own requirements for membership, for competence to practise subsequently, but they would use the RENG as the first step.

'I should be very sorry to see a general move towards a four-year university course... the concentrated three-year course is one of the great advantages of the British system...'

So that is really the background. We did not ask for any rigid pattern of triennial to the RENG. I think we were expecting many flows to bloom. People are bemused by the diagram in the report; thinking that is the only way to do it. In fact, there is a great deal of freedom, and I am concerned anyway, but many ways. I think that is really it. We were also concerned with whether, as you said, there is enough capacity in industry to provide the training. Geoff said to us, 'Let's have it all back in the universities, education and training—like in Europe.' We said we did not think we could do that. 'Let's do it the British way. Let's do it with some elementary training in engineering practice within the course, but let's require industry as well to put in its place afterwards.' So that is the way the recommendations came out. Chairman: I think this is a helpful description, because the aim of the committee was to get a balance between the integrated experience backed up by technical knowledge. The mechanism proposed in the Finniston Report has perhaps been pushed a bit too hard, and some people see that as the only way of doing it. The balance of it is, of course, very much flexible, can one allow and still ensure that people get an adequate training. James, would you like to come in now?

Sir James Hamilton: Yes, if I may, just a couple of comments on what Hugh Ford said: John Horlock has said, 'First, on registration, I would like to see an extension of the RENG to cover the whole of the engineering community because I do not want to preempt what the Government may say in its response, but I do find a good deal of muddled thinking about registration and the purpose of registration. I think we can go on saying that the expanded RENG is for use, would be grateful. In particular, I find confused thinking on



Sir Geoffrey Allen: chaired the symposium.

for whose benefit is registration. Is it for the benefit of the individual engineer in his career? Is it for the benefit of the profession? Is it for the benefit of the industry? These are not always coincidental. There may be tensions between the three. I find that sometimes when people talk about registration they mean legislation for the benefit of the individual, sometimes the profession, sometimes the industry. I think one of the important things about the method of registration is that it should be of benefit to all three.

On the question of degree courses and that of practical training associated with degree courses, I was very pleased to hear John Horlock say that Finniston had not intended to set up a rigid pattern, because I think this is one of the things that troubled me most of all about Finniston. If we can assume that the diagrams are simply a basis for discussion rather than a rigid definition of what is going to happen, then I think we might have a better report in relation to education.

I was very much taken with John Horlock's definition of the aim—the aim would not still be the ideal, but certainly the aim—which was the old system of a three-year degree plus a graduate apprenticeship. I would almost go as far as saying that if one could get back to that—and I do not think we shall—we would have gone a long way towards satisfying some of the problems in the Finniston Report.

On one or two more detailed points, if I may take a claim now—and I am sure it will give rise to some controversy—I should be very sorry to see a general move towards a four-year university course, that is four years aside from the practical training. I do think that the concentrated three-year course is one of the great advantages of the British university system and I think we sometimes do ourselves an injustice by comparing it with what happens in other countries, making the facile argument that because an undergraduate course spends longer at a German university or a Dutch university, he is thereby getting a better education. Very often the reverse is true.

On the pattern, I have no strong views. I do have a great liking for sandwich courses. I think there is a great deal to be said for the sandwich course. One of the advantages of the sandwich course is that it more clearly defines, it seems to me, the integration between the training and the theoretical degree work, and it gives a better pattern of integration. One of the things that troubles me—and I was not too clear from reading Finniston what their proposal was—was the exact division between training given in the university and that given in a sandwich course. If the balance is too much in the direction of the educational institution, two affects may make that practical training rather less effective than it should be. One is the sheer question of resources, and it is a question of equipment, of situations with the proper complement of staffs or universities and polytechnics, and their ability to provide this instruction in a competent fashion. So I tend to move towards the industry rather than towards the educational institutions.

Here I put my finger on what I feel is the most difficult aspect of all this, and that is the question of getting industry interested. I think it is very important to involve and able to provide the relevant training. It is very difficult at the present time to get industry to do this because of their general

attitude. I do not think we should be too inhibited by that. I think it would be quite wrong in this discussion to say it is very difficult now so it will be difficult later on in the day. But I do think, if I could just summarize, my impression is that the education world is subject to the kind of qualifications that I put forward—on the whole sympathetic towards some kind of review of engineering education, but I am not sure that industry is yet sympathetic nor fully understands what is in view. Chairman: Would either John Horlock or Philip Hughes like to pick up this capacity for industry to take on this role of providing the experience and the supervision of the students while they are getting experience?

John Horlock: I can only do so in civil engineering. There are some of us in the Institution of Civil Engineers who still feel that to some extent it is the institution for non-military engineering, but along with that goes a grave suspicion that engineering is not one profession and that the highway engineer has very little in common with the marina engineer, probably more in common with the town planner, for instance. I have been thinking to methods of education in which we can apply to large industrial firms in manufacturing industry. All told that probably accounts for 25 per cent of what Finniston hopes will be registered engineers. No more, I expect.

The civil engineer as presently defined is in a rather special situation—a different situation—because almost inevitably he is employed by a civil engineer. This makes a tremendous difference so far as the education and training is concerned, because he does not go to a university, he goes to a school of engineering, which is a very difficult one to large part of manufacturing industry. I do not know how long ago the Chilworth Committee first set it. It is probably nine years now. I suspect that we saw a need for change and are now implementing changes, but not so much on the educational side but on the training side, as Finniston recognizes is necessary. But I am afraid that our own deal very well with an engineer who is employed by an engineer and supervised by engineers and understood therefore by his employers, but not at all well for manufacturing industry.

Chairman: Could I pick up the general point that all three speakers have raised so far, and that is the need to couple education and training with experience. Surely, by institution recognizes that? Horlock: Yes, and I can add a little perhaps to the European dimension on this. The European Federation of Engineering Institutions and its EEC section have always recognized that a first degree course should be followed by practical experience before an engineer is competent to practice. Unfortunately, many of the European countries which rely on degree courses have refused to do anything about that. They turn round and look at Britain and say 'You have got to change to a four-year course' and so on, and so on, and so on. You have got to have more practical training. Nevertheless, as far as I know, the British system virtually in relation to the draft directive of EEC, and just at a time when we in this country are being attracted to the French and European systems they are turning round and realizing that they can learn a great deal from the British system. More than that, I hope we are going to show them

Chairman: I do find it a bit strange when you say of course that engineers always work for other engineers. I really do not think that is quite true. Bartlett: No, but it is a broad truth. Around the table we have got a whole lot of civil engineers who are no longer civil engineers, using the definition that many would give. I am a civil engineer, I agree, if you say non-military engineering, which I think on the whole you should think the only answer to all the matters must be on a wide variety of education and training. No strict fences.

Chairman: And some way of measuring the competence they acquire.

Bartlett: Yes.

Chairman: Philip, would you like to come in?

Philip Hughes: Yes. I think I really attack from two points of view, neither of which is perhaps the most relevant for this gathering. Firstly, I help run a computer consulting company and I find it very difficult to relate our needs to the main body of this report. But the it is not addressed at our needs. Secondly, as I say, I was once trained as an engineer and a professional which I deliberately left for some of the reasons that I set out in the first section of diagnosis—why it seems a rather unattractive profession for people entering it—does not seem to be enough status, does not seem to be enough to drive a person to play in the long term, but I am very concerned and frankly disappointed by what Sir Hugh and Sir James have said. It seems to me that it is very understandable that we want to hang on to the British system. The point that does not seem to be shown not to work. What we are really saying, what has been said already this morning and I think many people have said, from the engineering institutions and from industry is 'If only we could make the British system work properly, everything would be fine', adding with great reluctance, and often with great misunderstanding, what is being proposed for the education sector. I think Sir James has slipped into this this morning by referring to training in the university.

We, the engineering professors, are not talking about training in the university—although it does appear in the Finniston Report. But it looks like training. This is because of the emphasis given to EA1 and EA2. But we are talking about something much more fundamental. May I just comment on why it does not seem to me to work—the British system. The consumers—industry—complain bitterly about the quality of the output from the engineering schools. I have been at Cambridge at one end and the other end, they complain bitterly about the less able students who are not very capable in the mathematical

pressure which will come from a 'saturation' mechanism. In fact, the mechanism will not be very strong, we feel.

Some of you perhaps went through the Metro-Vic apprenticeship. One of our professors at a meeting recently said that those people who seem to enquire most about the Metro-Vic apprenticeship scheme are those who are not going to go through it. I am very grateful for the experience I had as a Metro-Vic apprentice, but comparing it with the kind of preparation which I know needs to be provided now for engineers, it was woefully inadequate. It was an experience through a sort of clemency. This was how one spent, and this is not the kind of preparation which we need to provide now. And truth to tell, it will get return, as a representative from industry has pointed out. The resources are not available.

The other thing that puzzles me is why we think that everyone else is wrong, why all the continental countries are wrong in having developed over 100 years a system where the education for engineering practice is provided within technical university schools. In America in the last 25 to 30 years there has been a move away from the practice-oriented school to a more scientific-oriented one and there are very substantial complaints about this, and with justification. For everyone who can say that they have moved away from the practice-oriented school to a more scientific-oriented one, one can also produce well-established cases of individuals who say 'What a wonderful system we had. Let us hope that the British move in the direction that we have been moving towards, to move back again to the wonderful system we used to have'.

I am not too impressed, frankly, by references to the European Commission and so on about the desirability of post-graduate training. Yes, we agree that there should be good post-graduate training, it is not to be made to work even with the

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Contribution of industry

Chairman: Yes, I am sure that is right. Quite the wrong answer. Again, I think there is a fair degree of unanimity around the table. What about the three academics commenting on the picture that everyone seems to agree on, namely the unified approach to the education, training and experience, and then on their experience of the ability of industry to provide the training. We are talking about an integrated package. I will come back to Sir James's point when we have explored what that package is—about registration, and the purpose of registration.

Professor A. W. J. Chisholm: Which I think is a very good point. My own view is that registration is not by any means the most important thing, because what we should be concerned about is the change at the working face of industry. Registration will drive a person to play in the long term, but I am very concerned and frankly disappointed by what Sir Hugh and Sir James have said. It seems to me that it is very understandable that we want to hang on to the British system. The point that does not seem to be shown not to work. What we are really saying, what has been said already this morning and I think many people have said, from the engineering institutions and from industry is 'If only we could make the British system work properly, everything would be fine', adding with great reluctance, and often with great misunderstanding, what is being proposed for the education sector. I think Sir James has slipped into this this morning by referring to training in the university.

We, the engineering professors, are not talking about training in the university—although it does appear in the Finniston Report. But it looks like training. This is because of the emphasis given to EA1 and EA2. But we are talking about something much more fundamental. May I just comment on why it does not seem to me to work—the British system. The consumers—industry—complain bitterly about the quality of the output from the engineering schools. I have been at Cambridge at one end and the other end, they complain bitterly about the less able students who are not very capable in the mathematical

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The undergraduate curriculum

Chairman: Can I just stop you there for a moment? I am sure that you have started on registration because you wanted to get you to discuss what was necessary to get an engineer to the point at which he regard him as being competent to practise. The other speakers have talked really of something of the order of a five or seven-year period in which there was a firm start and experience was built into this. Most of the view has been that the essential part of the experience is that it should be real, and external to the university, but of course integrated with it in building on the knowledge gained. You are saying four years internal. What about the view of what would happen thereafter, say in two more years?

Chisholm: I think it is desirable to have supervised training through a Masters of Engineering course. I think a true practitioner Master of Engineering—but the truth is that industry—British industry—will not be able to provide suitable supervisors across the board. We have working experience with industrial companies, we know that our 'wreck'—our mentors of the past, we either not there or crucially occupied in their own business and affairs. Apart from that, we are concerned with the generalities of British industry, the weaknesses of which have been discussed extensively.

Chairman: So you would not try to influence that, and if so?

Chisholm: I would be very happy for the engineering institutions to go on trying to influence it, and the engineering schools could assist. But their crucially important and priority job is to learn how to teach engineering practice, professional engineering practice.

Chairman: Bob, would you like to come in? I should still like to hear a little more about what you see about the willingness and the logistic ability of industry to provide this experience, because there is a general feeling that you do need to layer that on top of a good basic start.

Professor R. C. Smith: I think there is a premise which the first two speakers took, and that was that the pattern of the engineering education in the past was the right one. I think what we are talking about within, let us say for short-hand, the four-year course package, is the development of education in the practice area, which has perhaps never taken place. To that extent we are talking about the orientation of engineering departments and faculties into freshly orientated schools, moving away from a purely science basis to one where design, manufacture and so on become the heartland rather than the scientific facts behind the heartland.

As I see it there is the hope that if we get that bit right, then we in fact produce better engineers; not as good engineers as in the past, but even better ones. This other thing to say about the past is that the past system was copying the system of the past, and the numbers which are now going to universities and polytechnics. So something which was appropriate in the Metro-Vic days is no longer appropriate.

If I could make one or two other points now I have started—really copying on why universities and polytechnics rather than industry doing some of the engineering practice. I would argue that university staff do have skills in education and in teaching which perhaps our industrial colleagues do not have, and that is why we need to have more of the practice matters—the first steps in practice—into a university/polytechnic environment. I can give practical examples perhaps under continuing education, where companies have approached us not for our knowledge of a particular technology, but because we could provide the educational infrastructure covering certain—in that case—gaining engineering practice areas.

The last point that I want to finish on is what I think was the task of seeing the Finniston Report narrowly within a manufacturing industry context, and even within that a narrower context again—the mechanical engineering part of manufacturing industry. If I can say that I think we are adding to this country's wealth, it would be good to have a manufacturing

list: it would be under service industry, to much of our discussion think we tend to worry about the civil engineers as being cut out one limb. Be careful with another group, the electronic engineers and computer engineers, and they are out another wing. I want them to be seen as part of the main stream of engineering. It is vital that in our discussions on the future education, training and experience of engineers we include the whole range, including those as well.

Professor G. R. Higginson: I should like to return to your earlier question, chairman, about the willingness of industry to share in the formation process. Of course, Bob's point about the vastly increased number is a vital one, but I come from a department which operates not a thick sandwich course is taking an increasing share in our intake of students. Something like half our intake of 70 or so spend a year in industry before coming to us, and one of these are sponsored in a five-year package.

The evening year in industry is jointly supervised by the department and the employer, and in the main we find that these companies provide what we regard as any rate as well structured shared in the total five-year package. So I repeat, perhaps contrary to the general experience, an increasing willingness by industry to support good people. I think they are very selective—rightly so. This willingness to support good people is new shown in the milk round.

Horlock: I am concerned that our proposals for EA1 and EA2 might be interpreted as the introduction of practical engineering within the course, and that does not go far enough. It was the wider introduction of the teaching of engineering practice that we were after. This we found very difficult to specify. In fact, I wrote a full appendix—'which never got into the report'—on an 'example course, how this might be done. The CERC evidence

'University staff have skills in education and teaching which perhaps our industrial colleagues do not have'

really did not tell us exactly how to do it, so we had to set about seeing whether we could do this. I found this extremely difficult but I did some work with Michael Francis and Francis Dickson, doing a course in mechanical engineering. When we tried to get these aspects of the teaching of engineering practice into the course, we found that we could not get it into three years. This is why we have a disagreement about what the numbers should be three years or four years.

The committee took the CERC evidence to begin with and said 'cut out some of the engineering science, put a bit of engineering practice in, and you can do it in three years for most students.' When Dickson and I went into it in detail we said that we could not do it in three years; we really needed four. That was the reason for the haziness in the report.

Hendilton: On this business of three-year and four-year courses I think there has been a tendency to equate three-year courses with the British system; and therefore representing a policy of no change. I did not mean that at all. I did not mean that because we stuck to a three-year course we were stuck with the present system. I think we should think that would be a very unimaginative attitude to take. All I say—and I say again—is that I would be sorry to see a move towards a universal four-year course, and I still feel very strongly about that.

Alec Chisholm mentioned criticism from industry. Of course industry has given its criticisms, and it gives them frequently and regularly. But I think you will find that they cover a much wider spectrum of criticism than Alec Chisholm has suggested. When you are analysing

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Because we regard it as part of the total system where we talked about their competence to practise, but also if there was an interthence at that level it could go some way to bringing back experience into the undergraduate courses by virtue of the fact that many of the tutors, from academia, would indeed be the undergraduate teachers. C. D. L.

as full-time employees; the role then, rather than providing the studentship, would be to provide the teaching material, the resources to teach.

Q: Yes, because if we are not talking about that subsequent time, I believe it gets more complicated than it has got at the moment. Within it I believe the

Qpan: University in my view, got to integrate the teaching of the polys and the universities postgraduate education. It is illogical that it works this way, otherwise we shall not solve the logic problem either way. John, do you like to comment on that?

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FINNISTON AND THE FUTURE

peculiarly English that we are inclined to think that education is for personal or self-development rather than for a job, which is what our competitors believe it is for.

Chairman: Suppose you cannot solve the problem in the schools and you get to a situation where you have a small constant wedge of people moving into science and engineering in the universities, the only other course open to you is then to try to convert some scientists. This is another thing—I think it is just mentioned on a passing in one place, John—that for very good reasons you chose to leave out of the deliberations of your committee. What would you regard as the sort of minimum conversion course? I suppose it depends very much on the different parts of engineering. In Philip's area a second physicist could convert pretty quickly and be very effective. One could almost say that of all bits of civil engineering through John would probably blow a fuse.

Higgsman: I think the conversion of a geologist to a geotechnical ground engineer is a one-year MSc job. That works very well indeed.

Chairman: What one might have to do if one cannot solve the other problem is to say we will deliberately steer some of our maths and physics into going on to be trained as engineers, or convert them.

Hughes: But they do, do they not, because frankly they go into industry anyway.

Chairman: Sure, but then of course there are two problems. One is the business of the professional engineer, which Finniston talks about, and that is the bit I should like to address you to. The other is that quite a lot of them stay as scientists in industry and tend to fuel, as it were, the support functions in engineering rather than act as engineers per se.

Horlock: I think we have to make the maximum effort to convert people if we can. I am not convinced that we can convert the arts people into engineers, but the scientists we can convert to do good jobs, and industry does it all the time. I have had my knuckles rapped over this recommendation for widening up the MSc courses. I have had correspondence with various people who say: "There are some really good courses for converting scientists into engineers and you must not do away with those courses." I am sure that is right.

Chairman: Only to a point. I just do not think they go far enough.

Horlock: The thing that worries me, though, is the backward route into engineering. If we create a backward route into engineering, then we are back to the status problem again, and you become an engineer by taking science instead of taking the professional engineering course.

Chairman: Yes, you cannot become a doctor by taking a course in biology and then a one-year conversion. It is the system and of it that is the difficult thing that those who convert are not used to. They are good at the unit operation but not at putting the whole thing together.

Horlock: I am not sure about that, Chairman. The electronics industry recruits two kinds of people: they recruit electronics engineers who are going to do the good solid job. For the rather more inventive they tend to prefer physicists. Those brighter kids have tended to go into physics. Is that because of the system in the past I am not sure.

Chairman: Only in part. We pointed this out in our reply to Finniston, and that was partly because we had Derek Robinson on our Council, who said "I do not hire an engineer to do these jobs. I hire a physicist. But of course I am damn sure to get them the rest of the things they need if they move into engineering area".

Hughes: I would say more than that. We open it. We open it as wide as we can because we find that we probably can recruit a higher absolute level of whatever it is—intelligence, capability, etc.—



Sir James Hamilton and Sir Hugh Ford



from a science and mathematics base than we can by confining ourselves to our own particular discipline of computer sciences at university. This is nothing to do with computer sciences courses, but because like others they are only as good as their input.

This is back to the school problem. So we deliberately try to go for a wider selection of graduates and "convert" them to computer science. We are able to convert them at a cost and a time that is relatively far, far less than required in traditional engineering fields. We could debate why that is so, but that certainly is the case. However, I would say that anything that was done in the universities that helped this conversion would help us tremendously. I come back to the point I referred to before lunch, this business of structure of courses. For example, we are prepared in principle to do the conversion even starting arts graduates. However we have to be balked at the sheer cost of doing so.

'The engineering schools have not provided an education which is sufficiently distinctive from science and physics... we have tended to produce second-rate scientists'

We believe that certain arts graduates could convert to computing if they could get a sort of six or eight months course of specialist kind from the universities. We would be prepared to take it from there onwards, but we are not prepared to go the whole way. From this I wonder if there is not middle ground where there is something—I am not saying to start from an arts graduate sphere, a traditional engineer—but start from a scientist/mathematician/physicist, have a part of the conversion within the university system, and that was partly because we had Derek Robinson on our Council, who said "I do not hire an engineer to do these jobs. I hire a physicist. But of course I am damn sure to get them the rest of the things they need if they move into engineering area".

Hughes: I think I have already touched on the general question that John is about this—whether our Finnisian proposals were just a bit too conventional altogether, and whether in fact there is a slight type of route, another type of

education and training you need for people who are going in for the new technology.

Chairman: I wonder if the real problem is that we have taken really a snap shot at the target—one part of engineering—because if you go back into the Victorian era, physicists were people who became mechanical engineers and they certainly became civil engineers—it was quite an accepted route—and as it moved on schools of mechanical engineering and civil engineering grew up. The next phase was when things like the chemical engineers came in, and they were fuelled originally by chemists. Chemistry was an acceptable route into that. If you were a physical chemist you knew about distillation and so on. But that has moved on now; you would never take a physical chemist and call him an engineer. I see this sort of progression going along. The latest one is the most analogous to chemical engineering is bio-technology. Chisholm: I am in favour of this openness but my perspective on the conversion of scientists/mathematicians to become engineers—and I have got personal friends who have made very good engineers—is the fact that the engineering schools have not provided an education which is sufficiently distinctive from science and physics. To be really blunt, we have tended to produce rather second-rate scientists and have not succeeded in producing really thoroughgoing engineers because of the limitations on time. Within this new context, where we really do have something sufficiently distinctive to offer, then there may be some justification for expecting a longer conversion period. This might fit into a more flexible system in the future.

Hughes: I think "economic pressures are forcing us in a way, not from the best motivations or "we need to get down to this" but from the worst motivation, that people cannot get the correct job. As a consequence certainly we as a company are more and more able to actually make access to extremely bright people—people who have got even part way through PhDs and realize that at the end there will be nothing—subjects like metallurgy for example—and as a consequence we are prepared to do it. They are prepared to have personal loss in time, aggravation, hard work and everything else to times the right thing are wrong for most things but they are wrong for tackling this particular route.

Chairman: I think from the Science Research Council point of view we would be very happy to explore that and do deals, which is what we are doing on the engineering side anyway. But it does leave this group with John's dilemma—how do you really want the supply of engineers, how do you really want the professional status? While looking at these essential routes open.

Horlock: I think I have already touched on the general question that John is about this—whether our Finnisian proposals were just a bit too conventional altogether, and whether in fact there is a slight type of route, another type of

field, by which I mean one-third have got the appropriate engineering degree which happens in our field to be computer science. That means that two-thirds anyway are having to convert and are prepared to convert. Needs must. We do not have enough otherwise.

Chairman: We are already trying to develop this. But of course we have to be a bit careful, because I am sympathetic to John's point, that engineering has got itself into this problem, which science has not, in fact, of having in concern itself with professional status. I wish to start the discussion again I could take you back to registration and say this is one of the few reasons for having registration—for recognizing a degree of professional competence to practise in a certain area.

Chairman: It is very revealing what civil engineers do, did not rise until three or four years ago. Their approach to training physicists is comparable to their approach to training engineers. They train them as professional physicists not, as we do, as experts in physics knowledge, science. In other words, they do the conversion job or attempt to do the conversion job to practitioners.

Chairman: Of course, the physics content in Japanese schools is rather different from us—very much along the German lines. Barlett: The Institution of Civil Engineers has always recognized the need to allow specialists in, not only to fill the vacuum in our case but also because people from other disciplines can often make a unique contribution to existing technology as well as new ones. The rules have always been framed that way. The degree is still necessary. Then we try not to put too many hurdles in the way. Whether a national registration body would take the same view I do not know.

Chairman: The message I get through all this is that when it comes to transferring from science to engineering, the key thing is that you must not be absolutely excluded because you can always benefit by absorbing key bits. With emerging technologies this is easier; with the established engineering disciplines this is more difficult. The difficulty stems from two things. One is recognition of the men—whether he is recognized as a part of his new profession. But the other is in a sense need and confidence; that is to say, what is the supply in your area like; what are we in the supply must be a governing factor; in the end you will find somebody to do the job. But at the end of the day it all turns on confidence as to whether you can do this job adequately.

The next steps?

I think, John, in closing, one of the worries I have is the tremendous lack of confidence that you see now in engineering industries among groups of engineers, despite the fact that Finniston has given them the message.

Horlock: I do not think I share that view entirely. I feel pretty encouraged by the response to Finniston. I think that although people have said "Yes, but we do not like this" or "No, we do not like that", the body of engineers in the profession and in the academic world as well—feel it is going our way, and we should go on for as we can with the momentum.

Chairman: I do not dissent from that, though, that as a result of Finniston's message, there are tremendous opportunities for improvement, which hopefully we will grasp. But I think that the engineers themselves have got to be making special pleas. They have got to show a measure of confidence that they are not disappointed in the past 20 years if it is really going to come on.

like German engineering incorporating the needs of industry. Higginson: I agree with what Alton has just said. The government say "No" to it, things in engineering are quite different in many ways. Chairman: And so they are. Higginson: When you say "No" to Finniston, what times "No"? Not setting up Authority?

Higginson: The first "No" I hope we shall not get. Authority. Even if the government say "Surry we cannot afford this" I think things have stirred up so much in the world that we shall see changes.

Chairman: Can I pick you up that, because throughout the my aim was not to have the anxiety discussed, because it was to me it would become a stumbling-block in the debate you have been such good boys any of you wish to say what think about the Authority, we each have two minutes.

Horlock: I still think a lot of it is necessary. I don't think I thought that it is a body accepted that there should be an Authority with no more than a few teeth. We were not putting no money into it.

Chairman: I think we need an Authority that would help to provide leadership to organize the group of writers. He shows their convergences (many), and their divergences (some) through an analytic scheme. His vocabulary involves some specialized and unusual usages: once these are mastered he will be found always lucid and consistent, though dry. He is perhaps at his best when in chapters seven to ten he moves from social structure through the converging analyses of change in society which his subjects offered. (I also particularly enjoyed chapters 11 and 12, on the social origins, but that unfashionable topic is not likely to be so attractive to most readers.) Now it would be easy to dismiss all this as merely a ballet of bloodless categories and concepts; but it would also be false.

This kind of thorough categorization of theoretical items, their comparative ordering and their close study, all reveal, at first glance, little of the nature of social science awareness in the United States at the turn of the century. To tell the truth, so they would have to turn to intellectual and cultural history rather than to the logic and "sociology of sociology" which Hinkle deploys. Without such a work as this that intellectual history would be very lame. Hinkle's work will not have to be done again, for it stands. We have here what we are promised: a "founding theory" to their credit, but one full of concrete analyses of social facts and these are of both documentary interest and often of contemporary relevance. It would be nice to have another book exploring these matters, and Hinkle's other writings show that he could do this well. I wish he would.

Certain reflections inevitably arise: Giddings seems as dull as I have thought him; Cooley is as creative and sophisticated as those who read him already know, and by far the best of this group; Lester Ward (the "American Aristotle") he was called, though no one has returned this compliment by talking of Aristotle as the "Greek Ward") remains to me rather absurd; Small and Keller are, very differently, underestimated; and so on. But taken as a group and judged not in their own context but as a species of men, they are not great men, great men as they were with Parato, Durkheim or Max Weber, but judges them against, say, L. T. Hobhouse in England and one is at once aware of their inferiority. Or compare them with Thorstein Veblen—treating him as sociologist, not economist—and Cooley appears, at best, as a mediocre writer. What he does is to extract rigorously a core of theoretical positions from his small group of writers. He shows their convergences (many), and their divergences (some) through an analytic scheme. His vocabulary involves some specialized and unusual usages: once these are mastered he will be found always lucid and consistent, though dry. He is perhaps at his best when in chapters seven to ten he moves from social structure through the converging analyses of change in society which his subjects offered. (I also particularly enjoyed chapters 11 and 12, on the social origins, but that unfashionable topic is not likely to be so attractive to most readers.) Now it would be easy to dismiss all this as merely a ballet of bloodless categories and concepts; but it would also be false.

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BOOKS

American founding fathers

Founding Theory of American Sociology 1881-1915
by Robert C. Hinkle
Routledge & Kegan Paul, £14.50
ISBN 0 7100 0401 X

Six faces stare glumly from the jacket of this book. They are those of Sumner, Ward, Small, Giddings, Cooley and Ross. They do much to bear out the view put, quite amiably, to me by a journalist two years ago that all senior sociologists are short, scrubby men with large heads and small moustaches. I am afraid that Professor Hinkle's book will do much to confirm him of this. I think things have stirred up so much in the world that we shall see changes.

Chairman: Can I pick you up that, because throughout the my aim was not to have the anxiety discussed, because it was to me it would become a stumbling-block in the debate you have been such good boys any of you wish to say what think about the Authority, we each have two minutes.

Horlock: I still think a lot of it is necessary. I don't think I thought that it is a body accepted that there should be an Authority with no more than a few teeth. We were not putting no money into it.

Chairman: I think we need an Authority that would help to provide leadership to organize the group of writers. He shows their convergences (many), and their divergences (some) through an analytic scheme. His vocabulary involves some specialized and unusual usages: once these are mastered he will be found always lucid and consistent, though dry. He is perhaps at his best when in chapters seven to ten he moves from social structure through the converging analyses of change in society which his subjects offered. (I also particularly enjoyed chapters 11 and 12, on the social origins, but that unfashionable topic is not likely to be so attractive to most readers.) Now it would be easy to dismiss all this as merely a ballet of bloodless categories and concepts; but it would also be false.

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Franklin Giddings, from the cover of the book reviewed.

1910, no further attention need be paid, says the conventional wisdom, to American sociology as theory or as inquiry.

Does Professor Hinkle do anything to change our laudatory minds? Do not compare them with Parato, Durkheim or Max Weber, but judges them against, say, L. T. Hobhouse in England and one is at once aware of their inferiority. Or compare them with Thorstein Veblen—treating him as sociologist, not economist—and Cooley appears, at best, as a mediocre writer. What he does is to extract rigorously a core of theoretical positions from his small group of writers. He shows their convergences (many), and their divergences (some) through an analytic scheme. His vocabulary involves some specialized and unusual usages: once these are mastered he will be found always lucid and consistent, though dry. He is perhaps at his best when in chapters seven to ten he moves from social structure through the converging analyses of change in society which his subjects offered. (I also particularly enjoyed chapters 11 and 12, on the social origins, but that unfashionable topic is not likely to be so attractive to most readers.) Now it would be easy to dismiss all this as merely a ballet of bloodless categories and concepts; but it would also be false.

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Appointments

Murray, Gallery Assistant of the Whitworth Art Gallery: Mrs Penny A. King, Graduate Assistant in the Careers and Appointments Service: Miss Hilary A. Siddals, Manager in the Medical School Electronics Workshop: Tom Bruhn.

limited and a Director of the Oxford company. He is also a member of the Board of Directors of the Animal Disease Research Association and a member of the Scottish Agricultural Development Council.

Ing Building, Exhibition Road, London SW7.

* * *

"Political Commitment from a Philosophical Viewpoint" is the subject of the first colloquium of the series in Paris/Lieden Group in Political Philosophy, to be held in Leiden, from November 1 to 2. Participants include Professor Charles Taylor, professor of political philosophy at Oxford University, Mr. John G. C. Lachar, lecturer in Philosophy and Fellow of Balliol College. Further information from the Montefiore of the college.

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Universities

THE UNIVERSITY OF WOLLONGONG
Australia

LECTURER IN GEOLOGY
(MINERALOGY AND PETROLOGY)
(LIMITED TERM APPOINTMENT OF 2 YEARS)

The appointee will be primarily responsible for teaching mineralogy and petrology in the undergraduate course but will be expected to contribute to research in other fields and at other levels. Interest and experience in the mineralogy of igneous rocks, particularly in the field, is essential. The University is a small, friendly, and progressive institution. The appointee will be given a salary in the range of £17,750 to £23,300 p.a. (plus superannuation). The University is a small, friendly, and progressive institution. The appointee will be given a salary in the range of £17,750 to £23,300 p.a. (plus superannuation).

THE UNIVERSITY OF ADELAIDE
Invites applications for appointment as

POSTDOCTORAL FELLOW
In each of the following:
RESEARCH INSTITUTE
to study membrane characteristics of bovine spermatozoa in cryopreservation and in relation to events of sperm maturation in the male reproductive tract. The appointee should have a firm grounding in biochemistry, particularly experience with proteins, lipids or membranes would be an advantage. (Ref. Position No. 3342).

DEPARTMENT OF BIOCHEMISTRY
to work on a project concerned with the regulation of haem biosynthesis and the metabolism of porphyrins. The work is aimed at understanding these processes in the molecular level and involves a study of the synthesis of specific heme precursors and the regulation of these processes. The appointee should have a firm grounding in biochemistry, particularly experience with proteins, lipids or membranes would be an advantage. (Ref. Position No. 3342).

MURDOCH UNIVERSITY
Perth, Western Australia

Applications are invited from suitably qualified persons for the following position which is to be taken up from 7 January, 1981, or as soon thereafter as possible.

SCHOOL OF HUMAN COMMUNICATION
(Denn: Dr H. Rutherford)

LECTURESHIP IN SOUTHEAST ASIAN STUDIES
(Ref: EN 0115)

The School of Human Communication is an interdisciplinary school consisting of programmes in Southeast Asian Studies, Comparative Literature, Communication Studies and Chinese Studies. Southeast Asian Studies focuses its teaching and research upon social, cultural and political transformation of modern Southeast Asia, and provides a comprehensive language course in Malay/Indonesian. The successful candidate should have a disciplinary background in literature and will be required to teach Malay and Indonesian literature in the original and a variety of the literatures of mainland and island Southeast Asia in translation. It is important that the candidate be able to teach literature in its broader literary, social, political, and cultural contexts, and be able to relate such teaching to other courses in the School's four programmes. The position involves work with students of the School of Human Communication interested in language, literature, and society, including the intermediate and advanced students of Malay Language. The candidate will be expected to assist with Malay Language teaching, to cooperate with other school courses and teach courses in both the internal and external modes of delivery.

Salary Range: \$A17,730 to \$23,300 per annum. This is a tenurable appointment and conditions include superannuation, similar to FSSU, long service leave, assisted studies programme, payment of fares for appointee and dependent family, removal and settling-in allowances and house purchase scheme.

Procedure for applications: There is no prescribed application form, but two complete and detailed applications, quoting the reference number, including full personal particulars, details of tertiary qualifications, career history and description of post held area of special competence and interest, research completed or currently being undertaken, personal views on teaching, membership of professional institutions and societies and positions of responsibility in these, a list of relevant material published by the applicant, written available to take up appointment if offered and the names and addresses of three professional referees should reach the Personnel Officer, Murdoch University, Murdoch University, Perth, Western Australia, by 31 October 1980. Applicants resident in the United Kingdom, Europe or Africa at the time of application should also forward a further copy to the Association of Commonwealth Universities, (App.), 36 Gordon Square, London WC1H 0DP.

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

ENGINEERING LECTURESHIP

Applications are invited for a LECTURESHIP in the Department of Engineering Production from graduates engineers or scientists preferably with industrial and/or research experience particularly in the manufacturing industries.

Specific areas of interest include:

- Computer aided manufacture
- Computer aided design
- Productivity management
- Quality engineering
- Manufacturing systems

Salary within scale £5,505-£11,575 (under review). Further details and application form from Paul Johnson, Recruitment Officer, tel. 49137/514.

Loughborough Leicestershire

UNIVERSITY OF DUNDEE
Scotland

LECTURER IN BOTANY

Applications are invited for a Lecturer in Botany in the Department of Botany. The post will be located in the Botany Building, Dundee, or as soon as possible thereafter.

Preference will be given to applicants with research experience in plant taxonomy, botany, and/or ecology. The successful candidate will be expected to teach and supervise research in the Department of Botany. The successful candidate will be expected to teach and supervise research in the Department of Botany.

Universities continued

THE OPEN UNIVERSITY CENTRE FOR CONTINUING EDUCATION HEALTH AND SOCIAL WELFARE SECTION

- a) Lecturer
b) Research Fellow
c) Course Co-ordinators (2 posts)

Due to the expansion of the work of the Health and Social Welfare Section, applications are now being sought for the above posts. The Section at present offers three courses—The Handicapped Person in the Community, Ageing Population, Conflict in the Family—and a pack of materials entitled Child Abuse. The courses have been designed to be inter-professional and multi-media and are aimed primarily at workers in the health, social and education services, who are professional activities bring them into contact with particular sections of the community. In addition, the Leverhulme Trust have agreed to fund an action-research project beginning the autumn. (a) Lecturer (Post No. 4135). Initially to work on the maintenance and development of the courses Conflict in the Family but with some responsibility for maintenance of other courses across the Health and Social Welfare Section.

Applicants should have experience in the field of educational technology or the preparation of materials for adult learning and/or experience of work in some aspect of the education, health or social services. A good degree, relevant to the subject area, or equivalent qualification, is essential, as is a real interest in the techniques of teaching and assessing students. A diploma, or equivalent, in educational technology would be an advantage. The appointee will be expected to work as a member of a team but also be able to act on their own initiative. The appointment is available from 1st January 1981 for a period of 2 years. The University will favourably consider secondment from the candidate's present post. The salary scale is £5,505 to £11,575.

(b) Research Fellow (Post No. 4120). To work on the action research project funded by the Leverhulme Trust. The aim of the project is to investigate the educational and economic implications of adopting selected components of distance learning courses for use in educational programmes for which they were not primarily designed. This will include specific investigation of the secondary uses currently made of educational materials produced in the Health and Social Welfare Section of the Centre.

Applicants should have a good honours degree in a relevant subject plus experience in a range of applied research methodologies including questionnaire design and analysis, individual and group interviewing, etc., and should be prepared to take full responsibility within a team setting for assigned parts of the project. The appointment is available as soon as possible for a period of 2 years. The University will favourably consider secondment from the candidate's present post. The salary scale is £5,505 to £9,595.

(c) Course Co-ordinators (Post Nos. 4136 and 5708). These posts involve the provision of a wide range of administrative services in relation to the Section's courses and projects. These include liaison with various University departments on behalf of course teams, dealing with student enquiries, organising meetings and generally assisting in the development, maintenance and evaluation of courses. One post will be mainly related to the first instance to Conflict in the Family and the other to the action-research project funded by the Leverhulme Trust.

Applicants should have a general interest in the ways in which continuing education can be provided, for adults and they should enjoy administration and have an eye for detail. The ability to work enthusiastically as a member of a team and on their own initiative is essential as is a first degree, preferably in one or other of the social sciences. Some experience of teaching or producing educational materials would be an asset. The successful candidate will be expected to work as a member of a team but also be able to act on their own initiative. The appointment is available as soon as possible for a period of 2 years. The University will favourably consider secondment from the candidate's present post. The salary scale is £5,505 to £9,595.

Post No. 5708 is available as soon as possible for three years. Post No. 4136 is available for two years from 1st January 1981. Salary is on the scale £4,795 to £8,095. Further particulars and application form can be obtained from:

Mrs. J. Sage (J84135/2), Centre for Continuing Education, The Open University, P.O. Box 188, Sherwood Road, Sherwood Drive, Blisley, Milton Keynes MK3 9RS, or telephone Milton Keynes 71231 ext. 423; there is a 24 hour answering service on 833088. Closing date for applications: 29th October. Please give the Post No(s) in which you are interested.

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Full-time staffed chaplaincy support committee for the Thames North Province of the United Reformed Church. The committee is responsible for the provision of chaplaincy services to the churches in the province. The successful candidate will be expected to work as a member of a team but also be able to act on their own initiative. The appointment is available as soon as possible for a period of 2 years. The University will favourably consider secondment from the candidate's present post. The salary scale is £5,505 to £9,595.

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SCHOOL OF SCIENCE AND MATHEMATICS

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Applications are invited for Commonwealth Scholarships and Fellowships. The successful candidate will be expected to study or research in the United Kingdom. The successful candidate will be expected to study or research in the United Kingdom.

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THE UNIVERSITY

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Applications are invited for a Lecturer in Marine Engineering in the School of Marine Engineering. The successful candidate will be expected to teach and supervise research in the School of Marine Engineering. The successful candidate will be expected to teach and supervise research in the School of Marine Engineering.

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DEPARTMENT OF GERMAN

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Applications are invited for a Lecturer in German in the Department of German. The successful candidate will be expected to teach and supervise research in the Department of German. The successful candidate will be expected to teach and supervise research in the Department of German.

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Graduates with a professional qualification in Social Work and specialist experience in the field of Residential Social Work.
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£10,508-£11,712 (Bar)—£13,245.
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Further details and form of application from The Assistant Director (Administration), Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date 20 October, 1980.

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John C. 15/6

Overseas continued

COMMONWEALTH OF AUSTRALIA
AUSTRALIAN CAPITAL TERRITORY
SCHOOLS AUTHORITY CANBERRA
Chief
Education Officer

Applications are invited from interested and suitably qualified persons for the above position. The following details are for information only. The successful candidate will be appointed to the Chair of Education in the University of Melbourne from the commencement of 1981.

The Australian Capital Territory (ACT) government school system is the seventh largest in the world. The ACT Schools Authority Ordinance which came into effect in 1972 provides for an Authority to administer, on behalf of the Commonwealth Government, primary, secondary and tertiary schools in the ACT. The Authority is responsible for the development and implementation of the ACT's educational policy. It consists of 14 part-time members, one of whom is Chairman, and the Chief Education Officer is an executive member. The Chief Education Officer is also the executive officer of the Authority and the professional head of the school system.

The ACT government system of education is based on the concept of schools being largely responsible for the development and implementation of their own educational philosophy and policies within broad guidelines laid down by the Authority and the resources made available by the Government.

The Authority is responsible for establishing and conducting schools and for ensuring that adequate provision is being made for persons attending, or seeking to attend, them. The system involves teachers and parents in decisions at all levels. Approximately 42,500 students from pre-school to Year 12 are served by this system. There are about 2,750 teachers who are employed under the Commonwealth Teaching Service Act. Clerical, administrative and other support staff employed number about 800.

The Authority and the educational community look to the Chief Education Officer to provide educational leadership and to contribute actively to the development of educational policy for the ACT system. The Chief Education Officer heads the professional and administrative staff of the Authority and is responsible for implementing the policies of the Authority and for advising the Minister of State for Education on ACT matters and for the smooth and effective administration of the system.

The successful applicant for the position will have appropriate academic qualifications, professional training, administrative experience at a high level and will be genuinely interested in the particular approach to education of management on which the ACT government school system is founded. The successful applicant will be expected to take up the appointment as soon as can be arranged.

The position of Chief Education Officer is a statutory office established under the ACT Schools Authority Ordinance. It is not within the Australian Public Service although the terms and conditions are similar to those prevailing for senior officers of the Australian Public Service including allowances and eligibility for admission to the Commonwealth Superannuation Scheme. The term of office is up to 7 years with provision for re-appointment. The present salary is \$318,281. In addition an expenses allowance of \$3,172 is provided. The salary and allowances are reviewed regularly by the Remuneration Tribunal established by the Commonwealth Government.

Further information on the position may be obtained from the Chairman, ACT Schools Authority (Cable A.T.S.A. A62600), with whom applications marked 'Confidential', close on 28 November 1980.

Chairman ACT Schools Authority
PO Box 20 CIVIC SQUARE ACT 2608
AUSTRALIA

Awards

The Leverhulme Trust

RESEARCH AWARDS ADVISORY COMMITTEE
INDIVIDUAL AWARDS FOR 1981

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Awards of up to £4,000 to senior persons pursuing their own investigations (not for higher degrees or equivalent). Awards payable for 3 months to 2 years. No subject of enquiry excluded. Applicants must have been educated in the U.K. or other part of the Commonwealth and be normally resident in the U.K. Closing date for applications (Form F/25) 1st December 1980.

MERITUS FELLOWSHIPS

Awards of up to £5,000 a year for 1 or 2 years to persons who have recently received or are about to receive (employment up to enable them to complete research). Applicants must have held academic positions in universities or other institutions of similar status in the U.K. or other part of the Commonwealth. Closing date for applications (Form F/26) 1st December 1980. Application forms and further information from The Leverhulme Trust, 16-18 New Square, London WC1A 2TH. Telephone: 91-8528.

REMINDER

Copy for classified advertisements in the T.H.E.S. should arrive not later than 10.00 a.m. Monday preceding the date of publication.

All advertisements are subject to the conditions of acceptance of Times Newspapers Ltd. copies of which are available on request.

General Vacancies

Could you be a teacher with a difference?

As a male or female Officer with the Royal Army Educational Corps, you will be offered more variety and responsibility than in most civilian teaching jobs.

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You could give career guidance and resettlement training to Officers and Soldiers leaving the Army.

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Although we accept that your main interest is in education, we'll expect you to warm to the idea of also being an Army Officer.

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We'd like to hear from men and women who are aged under 30 and are medically fit. They will be qualified teachers or graduates or at present studying at college or university.

If you like, we can arrange for you to visit a unit near your home. It's not a commitment but a chance to get a clearer picture of Army life.

You may first want further information on pay, promotion and how to apply. A booklet covering these and many other questions can be obtained by writing to Lt. Col. C.C. Baker, BSc, RAEC, Recruiting Staff, (Dept. E12), RAEC Centre, Wilton Park, Beaconsfield, Bucks HP9 2RF.



Army Officer

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REMINDER

Union View

Breaking the class barriers to education



Laurie Sapper

A great deal has been said by the professional "projectionists" about the size of the intake into universities over the next few years.

In most (but not all) cases the forecast of the number of students has been pretty well tied to demographic arguments. That is to say, since the number of 18-year-olds will rise until the year 1982-3 and then fall away, so the number of students applying for university will follow the same pattern. Hence the famous "bulge" so beloved of Shirley Williams and the level funding plans of the present Government to ensure that universities tunnel through that "bulge".

However, none of these prognostications foresaw or envisaged a much higher participation rate amongst the 18-year-old population. We already know that the number of women students is increasing at a far more rapid rate than men students, we know that mature students are beginning to increase in numbers and it may well be that the number of males applying in the next two or three years will begin again to grow at a higher rate than

the rise in the 18-year-old population. There is too, a growing call for short courses at university standard to meet the growing needs of industry, commerce and the public services. Last year at least 300,000 students took part in short courses run by universities and in most cases these have proved of inestimable value. Even without stimulation on the part of the Government and industry, the numbers of students are likely to rise, throwing further weight on a level funded university system. It is therefore extremely important that even in the face of this growth this resource pressure needs to be eased.

However, looking at the expansion mentioned above, is merely taking the passive view and the question to be posed is: "Hurs we, who have a stake and an interest in higher education, a duty to consider the possibility of a more radical approach to the United Kingdom?" If we are of the belief that education is a continuing process throughout life with higher education merely one of the stages in that process, then the answer must be yes.

What we have not discovered is the reason for this. Certainly, whatever criticism can be made of admissions procedures, the universities do not discriminate on grounds of social origin and therefore very little blame can be laid on the door of the universities. It is true that the financial pressures and lack of assistance for young people between 16 and 18 does play a part but this is not the complete reason by any means. What we do have and what we do

not look at fully is that of students from working-class families. More accurately, I suppose, we should talk about children of manual workers. Although definitions differ from person to person, there does seem to be a broad consensus that the proportion of children from manual workers' families participating in university education has not changed over the past decade.

This is the situation which every progressive educationist would like to see developing in relation to children of manual workers. We should ask whether structural changes are needed in our educational system or a propaganda drive to change attitudes should be attempted. The latter is the easier of our two inlets into higher education, we can enrich the lives not only of individuals, but the community as a whole.

The author is the general secretary of the Association of University Teachers.

AUT

Science in America

Scientists and the Presidential election



Clive Cookson

Does Ronald Reagan go in for astrology and fortune telling? Does Jimmy Carter believe, as a born-again Baptist, in the biblical version of creation? Or does he accept the theory of evolution? Is Reagan suffering from a transient cerebral ischaemia? A mild forgetfulness that goes of the first signs of senility?

Questions such as these are the nearest thing to scientific control in the campaign of 1980. Presidential campaigns have often so far. More recently, beyond vague and nebulous promises from the candidates to stimulate research and development and reverse the decline of the Carter administration, the Democrats have been promising to support a

major presidential candidate of whom they have been a great deal of intellectual movement raises interesting questions about the extent to which it may be able to affect school curriculums in the future.

Science then got Carter to state his current view of creation. "The scientific evidence that the earth was formed about four and a half billion years ago and that life developed over this period of time is convincing," the President said. "I believe that responsible science and religious work hand in hand to provide important answers concerning our existence on earth. My personal faith leads me to believe that God is in control of the ongoing processes of creation."

Carter's response will reassure scientists who shared a widespread feeling that he believed in the literal truth of the Bible. The President seems to have shifted ground during his four years in office. In October, 1976, he wrote to the Atlantic Constitution protesting that the newspaper "incorrectly" quoted him as saying that biblical passages such as the creation of Eve from Adam's rib were allegorical. "I have never made any such statement," he wrote. "I have no reason to believe Genesis, chapter II, verses 21, 22, or other biblical miracles" candidate Carter wrote four years ago.

For most university scientists, of course, biblical beliefs are far less important than his commitment to support their research projects. No previous President has talked so much about the need to increase basic research and, whatever the Republican Party platform may say about "Mr. Carter's opposition to real increases in the R and D budget," the record shows that Federal support for research has gone up in real terms under the Carter administration.

What the Democrats fail to mention is that the most responsible for starting the recovery in R and D was the last Republican President, Jerry Ford. And the President who set off the previous decline was Democrat Lyndon Johnson.

know about, is that at the age of 16 large numbers of children of manual workers vote with their feet and turn their backs on the educational system. There is just at that age no desire to continue at school until 18 (earlier in Scotland), which is a prerequisite for going to university.

The reasons for this general attitude are complex and subject to no easy solution. Are these attitudes engendered in the school system itself? Should we look seriously and not reject on doctrinal grounds the concept of sixth form colleges where the 16-year-olds are subject to different disciplines than in a school? Has the unemployment situation changed attitudes at all? These and other questions need to be asked and answered if we are to change this pattern of entry to university from children of manual workers. Until we do the universities will always be accused of a brand of elitism and of being institutions for the provision of education for the children of professional families and the middle classes—even though the universities are almost helpless in this particular situation.

It is no good the TUC or anyone else passing resolutions about the opportunities for children of manual workers to have a higher education when the opportunities are there but the youngsters turn away from those opportunities.

These problems can be overcome. At one time the view was prevalent among all sections of the community that there was no point in giving women a higher education since they would get married, have children and any university education would be wasted (so the argument went). Although this view is still heard expressed there is no doubt, looking at the increasing numbers of women now coming into higher education that a victory against that kind of attitude has almost been completely won.

This is the situation which every progressive educationist would like to see developing in relation to children of manual workers. We should ask whether structural changes are needed in our educational system or a propaganda drive to change attitudes should be attempted. The latter is the easier of our two inlets into higher education, we can enrich the lives not only of individuals, but the community as a whole.

The author is the general secretary of the Association of University Teachers.

Don's diary

Monday

The carillon in Xian's Telegraph Office Tower wakes me as usual at 6 a.m. with its tinkly-sweet chime of "The East is Red". The university car calls punctually in take me to my 0830 lecture slot of three hours. The smiling support group of six professors and research fellows greets me with chat and tea, and the audience of 50 researchers and industrialists is ready, professors catch up on my diary and a last letter home. Little things crowd over the pages and lend unusual red punctuation to the sentences where my wrist squashes them. Surprised this morning to learn that the university is to offer me an appointment as an Adjunct Professor: would I accept? So I have passed the exam! Anyway I am ennobled of China by now and will enjoy the distant association, so I assent. There will be a little ceremony before I leave next Wednesday.

During the next three hours it will become stifling; the fans are too noisy to run during lectures; the overhead projector will probably overheat and shut itself off. But concentration is intense on what the "foreign expert" has to say.

Tuesday

After 12 days here I am two-thirds through the mission, well settled in and beginning to feel that I have the real measure of the audience. I am a small transient cog in China's programme of the Four Modernizations, brought over at UNESCO expense to give three weeks of lectures on systems engineering and large-system planning at Xian Jiaotong University. The context is very different from the usual academic perambulation: audience a mystery (no prior briefing); Chinese far too respectful (or cooey) to give advice or feedback; subject the government is treating as "most important to modernization".

An unconformably aware of "foreign expert" status and the fact that most of my audience have not met a Westerner before, I feel like an exhibit undergoing careful scrutiny: must not let UK down. Audience rather impassive, unwilling to ask questions. Discover that academics enjoy theoretical presentation, industrialists want ready-made tool-kits. Just like the UK, I feel more at home. Score bulls-eyes with relevant problem on population control pinned from local research group. Everybody's interested now.

Wednesday

Long session with an administrator during the afternoon finding out about the organization of Xian Jiaotong University (XJU). It's rather American with five vice-presidents for this and that and four-year degree courses. XJU is a key university, meaning it gets perhaps 100 or more times more resources than an ordinary one—a two tier system. General political control comes from Peking, with a Party Committee at the top of the university hierarchy. But the accent is now on "expertise". "Redness" does not colour research. Students on university committees? Not likely, not with the memories of those Red Guards. The pleasant walk round the leafy campus, a university will agree with barracks for staff and students, with its own kindergarten for staff children. Serviceable buildings circa 1954, but internal fittings poor to primitive. Numerous pads on cubboards in staff offices. Visit female student dormitory, eight to 12 bunks to a room, our-tained for privacy. The students bowed over their books, all studying engineering. W interview each other, and I am captivated.

Thursday

The audience in uniform blue is now identifiable as friendly individuals with whom I can confide. They love it. During one of the tea-breaks I was shown the draft of a textbook on systems engineering that the support group has prepared. I recognize familiar equations and diagrams and ask for translations of the headings. It's a pastiche (not a copy) of Operations Research, Reliability Theory and Systems Theory. How thoughtful of them not to show me

a copy when I arrived—it would have been so helpful. They must have used my lectures as a model to see if they were on the right track!

Friday

Afternoon is always free on Friday as the university is time-tabled for political studies. I am excited. Gives me a chance to collate, catch up on my diary and a last letter home. Little things crowd over the pages and lend unusual red punctuation to the sentences where my wrist squashes them. Surprised this morning to learn that the university is to offer me an appointment as an Adjunct Professor: would I accept? So I have passed the exam! Anyway I am ennobled of China by now and will enjoy the distant association, so I assent. There will be a little ceremony before I leave next Wednesday.

Evening is given over to watching the colour television in my room: two channels, transmissions 6 to 10.30 pm. Through it I have travelled all over China, got acquainted with classical Chinese opera (great fun) won the civil war several times over on film, followed a course on Peking and related the blandishments of the advertisement (yes!) urging me to buy more carpets, industrial diamonds and ladies' shoes.

Saturday

Another of the Saturday outings to one of the many historical sites hereabouts. Xian had its great days, 2000 BC to AD 1000, when it was the capital of the newly unified China. It had a population even then of two million and was the start of the Silk Road to the west. Meron Polo wrote a chapter on it. The modern city still uses the 4000 gridiron town plan. It works very well. Today we visit the Tang tombs, a long drive out and 1000 feet nearer the blazing sun in the hills. These private drives give a chance to observe the village communities at close quarters.

By the evening Xian is like a ocean bath, and the inside of the Opera House an oven. I am revived by the vice-president's fan. He whips up translations of the songs, but what words (Goodbye mother; My love is as deep as the ocean; My heart will not rest until Taiwan is joined to the mainland). The Chinese orchestra (traditional instruments with a touch of Mendelssohn) is entrancing.

Sunday

A day of rest for the Chinese after their six-day workweek week, which applies to university staff too.

After supper a knock produces the support group. Could they come in to discuss future cooperation between our two departments? Of course (Oh! adjunct professors have strings attached to them). What they want are visiting research fellowships for the systems engineering professors and researchers. A specific request is made for two of their number. I become official, call for formal applications, C.V.s etc. which I will put to my board of Studies and Senate. But I have few queries. These chaps are quite alright: academically and will add an interesting research dimension to the programme at home. And I am cheered to think that this so-called "support group" may be able to follow me on to the City University. I already know that I am becoming a sinner.

(Postscript: an Associate Professor from XJU joins my department in October for six months as a senior visiting research fellow. What he wants will be continued by one of the research fellows on a year's attachment.)

P. K. McPherson

The author is Professor and Head of the Department of Systems Science at The City University, London.

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